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ABSTRACT

This survey describes the range of computer technology that the Great City Schools are now using for administrative and instructional purposes. The report looks at how city school systems are now planning to install computers; how they are managing the planning, the purchasing, and evaluation of equipment; what equipment is actually being purchased and with what criteria; which courseware is being used to operate the systems; who is being trained to use the equipment and for what reasons; what computer languages are being taught; and how all of this is being maintained and financed. In addition, the report considers how the school systems are attempting to avoid racial and gender bias in computer software. Following the summary, 29 detailed descriptions by district are provided. (CMG)

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SURVEY AND ANALYSIS OF TECHNOLOGY IN THE GREAT CITIES

Prepared By

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THE COUNCIL OF THE GREAT CITY SCHOOLS
NOVEMBER, 1983

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We would like to acknowledge a number of our colleagues who helped in various ways in producing this report. First of all, we would like to thank all of those in our member districts whom we interviewed by phone. We took enormous amounts of their time, and we are grateful for their efforts in trying to make this report a comprehensive and accurate one. Those interviewed included directors of research, data processing, technology implementation, personnel, audio-visual, computer education, and others. Second, we would like to thank the members of the Council's Research Steering Committee who helped develop the idea for this report. In particular, we would like to acknowledge Walt Hathaway, the Director of Research and Evaluation in the Portland Public Schools, who served as the director of this project. Without his guidance, we would never have been able to compile the effort. Thirdly, we would like to thank the Council's Executive Director, Samuel Husk, whose support and encouragement were unflagging. And finally, we would like to thank Glorious Pierce for her diligence and accuracy in typing and organizing the report.

The Implementation of High Technology
in the
Great City Schools

This survey describes in general terms the range of computers that the Great City Schools are now using for administrative and instructional purposes. Of necessity, the results we found comprise a status report only. The use of computers and other high technology equipment has seen unprecedented growth over the last three years, a growth that will continue well beyond the publication of this report. Our purpose here is neither to make judgements about the utility of this technology or to propose local changes, but to provide our member districts with information on how other districts are implementing the technology.

Computers in schools have become in a few short years a complex and highly controversial field. Various national commission reports on the status of American education have hailed, damned, or ignored the entire movement. On Capitol Hill, the nation's law-makers have proposed implementing tax deductions for computer donations, but remain unsure whether such a move would help or hurt the drive to excellence. Companies producing computers continue to manufacture and sell equipment to schools, often faster than such large bureaucracies can adjust. At the local level, confusion appears to be the order of the day as no one is clear on exactly how to respond to community and national pressure to place computers in the classroom.

What is becoming clear, however, is that the computer may not be another passing educational fad. Report after report has emerged this year describing America's technology gap in our schools. It is becoming far more evident that using computers in the classroom will be increasingly important as the United States attempts to keep pace with other nations.

Such clarity begins to fade, however, when questions emerge about what the technology will be used for, what and how many jobs can be secured by such training, what is to be taught and how, how to plan for future programming in such a fast-changing field, how to assure equal access to the benefits of computers, and how to manage and pay for the privilege of using them.

This report will examine some of these issues indirectly be examining how our nation's urban schools are responding to the computer challenge. We will look at how city school systems are now planning to install computers; how they are managing the planning, the purchasing, and evaluation of equipment; what equipment is actually being purchased and with what criteria; which courseware is being used to operate the systems; who is being trained to use the equipment and for what reasons; what computer languages are being taught; and how all of it is being maintained and financed. In addition, we will look at how these school systems are attempting to avoid racial and gender bias in the new equipment and in the curricular programs.

Because of the wide range of topics covered here, not all issues are examined. We have not looked, for instance, at the instructional software used in the classroom and its effectiveness, nor at the management problems associated with such extensive purchasing. The field itself is not only extremely technical and detailed, but cuts across school system responsibilities for curriculum, finance, procurement, personnel training, materials evaluation, research and development, student records, and classroom teaching.

The information for this report was obtained directly from personnel in Council-member school districts who have primary responsibility for computer technology. Superintendents in each district were asked to identify the person(s) responsible for this important area. Each person, usually of Associate

Superintendent to Program Director rank, was interviewed at length by Council staff on the topics covered in this report. Written descriptions of each district's program were sent to those who were interviewed for corrections and modifications to ensure accuracy. These district-by-district responses can be found immediately following this narrative.

A. District-Wide Planning

The fast growing interest in computer technology has significantly increased the importance of local planning. The millions of dollars spent on hardware, courseware, and training has dictated such planning, but the planning itself is often lagging behind the dollar investment. Forty-eight percent of the districts in this survey have approved some sort of district-wide plan in the last three years (most of these within the last year). Another 41% are now in the process of developing a plan. Only three of the districts did not have any kind of plan for high technology on the drawing board.

All of the plans that have been developed include goals for instructional technology and about half also include finance/business and control administrative data management matters. The instructional plans normally included issues such as staff training, procurement and disbursement of hardware and software, maintenance of equipment, computer literacy, computer science and computer assisted instruction (CAI), and management and organizational problems.

Most district plans were developed by committees comprised of administrators, teachers, parents, and consultants. Some districts used consultants to develop specific recommendations and proposals for the plans. The use of consultants was especially prevalent with planning for the administrative applications of computers. In-house expertise was drawn on more often for instructional applications.

In the course of this study, we encountered only a small number of districts that mentioned designing plans for computers for vocational education or special education. Albuquerque and Milwaukee appeared to be ahead of other districts in these areas. In addition, we found that most planning was done on three to five year cycles. This would correspond to planning cycles in other areas, including federal programming. Minneapolis has a five-year plan in instructional technology and general school improvement that serves as a prototype.

What seemed most apparent from our interviews was that districts like Boston, Detroit, and Denver which had older plans, i.e. plans that preceded the purchasing of equipment, had evolved further both in the planning process itself and in the direction in which the school system was moving.

B. Management of High Technology

The management of educational technology historically has been handled by school divisions dealing with central office business/finance and/or data processing. This traditional organizational structure has begun to change over the last few years. Over 60% of the districts in this survey now have two distinct management directions: one, the original office(s) with a relatively large staff with responsibilities for data processing, finance, personnel, and payroll; and two, a newer office (or new duties within an older division) that coordinates instructional purchases, curricular standards, and in-service training. The latter division now appears to have prime responsibility in many cases for reviewing and approving instructional hardware and courseware, purchasing, surveying inventory, repairing equipment, consulting with teachers, and maintaining courseware libraries. In most cases, this instructional track has been in existence only a small number of years (usually less than three years), and has only one to three people assigned full-time responsibilities in this area.

Only 21% of the districts in this survey still had just one division in charge of all technology. On the other hand, approximately 17% had three or more divisions, usually with prime responsibilities for audio-visual equipment, personnel, and Chapter 1 (ECIA). Normally the person in charge of instructional technology, whether in an administrative or instructional division, also chaired a district committee on technology comprised of representatives from data processing, various curricular fields and grade levels.

The type and brand of hardware and courseware purchased is managed at the central office level in 72% of the districts. The remaining districts allowed individual school principals to make purchasing decisions. Only about 20% of the districts require the purchasing of specific brands of equipment or that courseware be centrally approved.

In districts with centralized authority, management problems include not only which equipment to buy but how to disperse it to the individual schools, and which staff to train in how to use it.

C. Computer Equipment and Courseware

1. Instructional equipment. Microcomputers manufactured by the Apple Corporation are the most frequently used instructional computers in the big city schools. Forty percent (40%) of the microcomputers used for instructional purposes are Apples. This preponderance of Apple computers appears to be due in part to the availability of compatible software through the Minnesota Education Computing Consortium (MECC), the most popular source of courseware (see section on Courseware). Radio Shack TRS 80s and Commodores are the next most frequently purchased micros (see Table 1). IBM manufactured equipment appears to be gaining increasingly large shares of the market compared to other brands, although

Table 1. Instructional Computer Equipment

Manufacturer	Share of Great City Market
Apple Corporation	40%
Radio Shack	23%
Commodore	17%
IBM	7%
Digital Equipment Corporation (DEC)	5%
Hewlett-Packard	4%
Atari	3%
Other	1%

it is found now in only 7% of the Council districts. DEC, Atari, and Hewlett-Packard terminals also have a small segment of this urban school market. Franklin, Dolphin, Data General, and Texas Instruments equipment complete the remainder of the microcomputer instructional equipment found in these city schools.

2. Administrative equipment. The most frequently used equipment for administrative applications is IBM and Honeywell, with Burroughs computers used less than half as often. Data General, Hewlett Packard, and DEC computers are found less often in central administrative functions.

3. Courseware. The school systems participating in this survey most frequently cite the Minnesota Education Computing Consortium (MECC) as the most valued source of instructional courseware. The attractiveness of this software appears to be based on its being carefully previewed, tested and validated; and

on its generally low price. We should note here that the MECC programs are compatible only with Apple computers at this time, although efforts are now being made to rewrite the software for Atari and IBM machinery.

While MECC courseware most often receives high praise, the most frequently purchased software is from publishers. Many school systems prefer the courseware from publishers over that provided by MECC because the former is reputed to be more relevant to curricular goals and basal textbooks. Other education agencies (local and state) and vendors supply courseware much less often than MECC and publishers. We found only four districts that reported developing some of their own courseware, and only one district where in-house courseware comprised the bulk of the system's courseware library.

4. Additional forms of technology. In addition to traditional mainframe computers for administrative uses and the new microcomputers for instructional purposes, city schools are instituting other new forms of technology (see Table 2). The majority of city schools now have or plan to have in the near future cable capacity. Most urban schools in major media markets now receive cable services when franchises are awarded.

In addition, electronic mail is reported in use in about half of the city districts, and about two-thirds expect to begin or increase this capacity in the near future. The most frequently used electronic mail systems include the Council's own Telemail system linking its legislative liaisons, Specialnet, and the Source.

Only five of the reporting school systems have video-disc at this time, but nearly half expect to in the near future. Similarly, few districts

are now experimenting with robotics, but several expect to become more involved in the future. By contrast, computerized word processors are found in all of the districts in this survey, and some now operate their own television stations and internal telephone systems.

Table 2. Additional Forms of Technology

Technology	% of Districts with Technology	% of Districts Planning to Have Technology
Cable	66%	66%
Telecommunications	78%	22%
Electronic Mail	44%	70%
Video Disc	19%	48%
Robotics	7%	22%
Optical Scanners	70%	7%
Word Processors	100%	100%

D. Equipment Maintenance

The area of computer maintenance in city school systems is changing rapidly. Almost half of the districts were doing some or all of their own maintenance or were planning to do so in the future. Currently, staff are being trained, maintenance centers are being opened, and some districts (like Denver) are forming maintenance consortia with neighboring school districts. For the moment, however, most school systems rely on the purchasing of extended maintenance warrantees while in-house capacities are being developed. Most warrantees are purchased directly from the manufacturers, but a number of districts are contracting out maintenance agreements through competitive bidding processes. Almost all school systems use at least two of three general maintenance strategies (i.e. in-house repair, manufacturer warrantee, and competitive maintenance

contracts). The fastest growing approach appears to be to develop in-house capabilities because of the lower cost and speed of repair.

E. Number and Uses of Computers

1. Administrative applications. At the central office levels, computers have been used for many years for business/finance, personnel, student records, scheduling, testing and research, and budgetary or payroll functions. It is in this area, that city schools seem to have the edge on other kinds of school systems in terms of numbers and sophistication of computer applications. This edge should not be surprising given the size of the districts, however, and the range of operations. More recently, central offices have begun computerizing library books, transportation routes, food services, curricular information, and energy usage patterns. Again, the sheer size and complexity of these districts dictates greater computerization for management purposes.

The most recent innovations for administrative applications, however, are at the school building level. Here principals, teachers, librarians, and counselors are purchasing or developing their own hardware and software to: manage courseloads; handle attendance; present vocational guidance information; arrange schedules; track library books; and manage grade reports, student records, test results, and Individual Education Plans (IEP) for handicapped students. Another fast growing application of the computer is the linking of individual schools to portions of the central office mainframe computers. Dade County appears to be breaking new ground in this area. (Table 3 shows the number of responding school districts which use many of these administrative applications at the central and school building level.

Table 3. ADMINISTRATIVE APPLICATIONS*

Student Academic Records	Central	Bldg.
Class schedule	23	12
Grade report	21	10
Test scoring	22	10
IEP records	17	8
List others		
Student Non-Academic Records		
Vocational Counseling	12	10
Health Immunization	15	3
Psychological test results	14	4
List others Attendance	2	
Transportation Functions		
Passenger lists	17	2
Route/driver scheduling	13	
Vehicle performance and maintenance	12	
List others		
Food Services		
Free/reduced priced lunch	19	2
Eligibility lists	17	2
Menu planning	7	1
Inventory	20	1
List others		
Library Functions		
Book inventories	16	1
Book orders	15	1
Book checkout	3	4
Overdue notices	1	7
List others		
Public Relations Area		
Mailing lists	24	4
Staff directories	23	2
Pupil directories	17	2
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	17	3
Eligibility lists	9	2
Budget Planning		
Collective negotiations	16	
Planning	21	2
School boundry/Census information	20	
Enrollment projections	17	1
List others		
Scheduling Functions		
Class schedules	23	9
Staff schedules	17	6
Building/Classroom utilization	18	4
List others		
Personnel Functions		
Salary information	25	
Employment files	21	1
Leave records	21	
Certification information	22	1
In-service information	9	
List others		
Business Functions		
Payroll	24	
Receipts/Spending/ Accounting	25	
Appropriations info.	18	
Inventory, Reports (Federal, State, Board)	22	1
List others		
Research/Development		
Testing	23	2
Research	22	1
List others		

*Numbers represent numbers of school districts responding that use computers for one of the designated purposes.

2. Instructional applications. The use of computers to teach students is the fastest growing role for this important new field, but a use that continues to lag behind administrative applications for most big city schools. As of November, 1983, about 88% of the secondary schools and about 57% of the elementary schools in the responding districts had at least one microcomputer or terminal for instructional purposes. These percentages have changed dramatically, however, since our original tallies in June, 1983, showing 76% of the secondary schools and 40% of the elementary schools with instructional microcomputers. The range of schools having microcomputers also is very wide, with at least one district reporting that computers were in only 1% of their elementary schools and one district reporting computers in only 40% of their secondary schools. In November, 1983, 6 of the 27 reporting districts or 22% have computers in every elementary school whereas 17 of 28 districts or 61% have computers in all of their secondary schools (see Table 4).

Table 4. Percent of Schools With Computers

Schools With Computers	Percent
• Elementary Schools w/computers	57%
• Secondary Schools w/computers	88%
• Districts w/computers in all elementary schools	22%
• Districts w/computers in all secondary schools	61%

While many school buildings appear to have at least one terminal for instructional purposes, in some cases that is all they have, for the ratio of students to computers is large. This survey has found that the ratio of students to computers in elementary grades (K-6) in the Great City Schools is about

863:1, or one computer for each 863 elementary school pupils. The range is very wide: 97 to 1 through 4000 to 1. At the secondary grade levels (7-12), the ratios are somewhat better. We found one instructional computer for every 186 secondary school students, with a range of 40:1 through 473:1[1] (see Table 5).

Table 5. Ratios of Students to Computers	
Elementary Grades (K-6)	863:1
Secondary Grades (7-12)	186:1

The uses that the instructional computers were put to was also explored by this survey. Districts were asked to identify either computer literacy courses or courses in computer sciences, according to their own definitions of each. Many districts reported that they did not have a computer literacy course for students per se, rather, literacy was infused throughout the curriculum as part of their computer assisted instruction (CAI) plan. Only a small number of districts have courses in computer literacy at the elementary grade level. In general, we found that about 50% of the districts had at least one computer literacy course in the 7th to 12th grades, but many had none at all. Recently, the Washington, D.C. Public Schools instituted requirements for a one-half credit course in computer literacy for high school graduation.

Course offerings in computer science tend to be more prevalent. While we found only five districts that had computer science courses at the elementary

[1]Ratios were computed by dividing the number of elementary (K-6) and secondary (7-12) students by the number of microcomputers or terminals used for instructional purposes at those respective grade levels. The highest and the lowest were omitted before computing a Council-wide average.

grades, all districts--except one--offered such courses at the secondary grade level. In fact, the average district offered seven different computer science courses.

In general, these course offerings in computer sciences are courses in programming or in computer theory. We cound that instruction in BASIC was offered in almost 90% of the elementary schools having such courses and in all of the secondary schools. (BASIC is the most common and least technical of all the major computer languages.) LOGO was the next most commonly taught computer language in grades K-6 while PASCAL is the second most common at the secondary grades (see Table 6).

Unfortunately, most districts could not estimate the actual number of students enrolled in these courses. Of those that could (8 districts) only about 2,600 students were enrolled at the elementary grades and about 3,060 at the secondary level per district.

F. Staff and Teacher Training

Most training of staff in computer usage or literacy is done in-house, but other education agencies and vendors provide instruction as part of purchasing agreements. All but one of the reporting districts had provided training for administrative and instructional staff. The number of teachers trained ranged from 6000 to 50 per year, and the number of administrators trained ranged from 200 to 11 per year. Most districts were unable to provide data on the total numbers of teachers trained to teach computer literacy or computer sciences; but of those that could, an average of 158 elementary teachers, 113 secondary teachers, 22 special education, and 14 vocational education teachers per district were so trained to some level of proficiency. We found only three

districts that reported teacher certification in computer literacy. Albuquerque and Boston have local certification, and Dade County complies with a state-level certification requirement.

Table 6. Computer Languages Taught in Great City Schools

Elementary Grades

Language	Percent
BASIC	88%
LOGO	66%
Other	11%

Secondary Grades

Language	Percent
BASIC	100%
PASCAL	77%
COBOL	59%
FORTRAN	55%
LOGO	37%
PILOT	30%
RPG	30%
Other	15%

G. Budget

About half of the reporting districts in this survey had funds specifically designated for instructional technology, and the other half purchased coomputers and courseware from their instructional materials and equipment budgets. Outside funding was contributed most frequently by local PTAs, but very

little by the private sector. We did find instances such as Detroit, Washington, D.C., Minneapolis, Columbus and California schools where the private sector had taken an active role in providing equipment. The districts that have specific computer funds had allocated amounts ranging from $55,000 to $3,000,000 (averaging about $790,000) for instruction in 1982-83, and from $270,000 to $3,500,000 (averaging about $1,970,000) for business and administrative applications.

H. Conclusions

From the results of this survey, a number of very general conclusions and trends emerged. First of all, it was most apparent that the computer movement has made itself most prominent in the secondary rather than in the elementary grades. While a small number of districts indicated in their plans that such computer familiarity should begin at the early grades, most districts in fact had begun at the secondary grades. We suspect that the reasons for this rest in the easy connection one can make between such secondary level training and available jobs, and in the difficulty of altering curriculum. Computer courses at the elementary grades usually require more broadly based curriculum revisions than at the secondary grades.

The issue of curriculum revision brings us to our second major point. It was disturbing to us that in some few cases the purchasing of equipment on a large scale had preceded the actual planning for what to do with it. Such purchases in some cases appeared to be driven more by computer vendors than by district-wide planning. It would be unusual for schools to purchase textbooks with no thought of the courses in which they would be used, but this appears to be what has happened with computer-buying in some districts. It is also evident that the software used, while state-of-the-art, is more likely to

shape the curriculum than vice versa. This seems particularly true with packaged mass-market programs. The highest levels of praise for computer courseware came from districts that had developed their own to match local needs and curriculum objectives. Unfortunately, it is much more difficult and expensive to develop courseware in-house, which is why, we suspect, that districts turn to outside sources.

We are also led to conclude that most of the training now done with computers is fairly isolated in particular secondary schools in courses designed to teach specific computer skills. This may be a temporary phenomenon, however, as time will be needed to build the supply of computers, develop general computer familiarity, and mesh the current hardware into the overall district curriculum. We were somewhat surprised to see such scant offerings in general computer literacy, but a closer look at the district's long-range plans show that such instruction along with CAI was the direction in which most schools were moving. Such fundamental change in how to present traditional academic material through computer will take a great deal of time, something that we applaud districts for taking in the planning process. Our greatest hope is that the enormous effort will pay off in increased achievement, although it remains to be seen whether computers in the classroom actually enhance learning.

A fourth conclusion we would like to draw deals with equity and equal access to computers and the benefits they may bring. We saw very few instances where districts were reviewing computer hardware and courseware for the same racial and gender bias for which they review textbooks and standardized tests. In addition, the concentration of language-minority youngsters in city schools makes it important to consider the implications of computers for bilingual

programs. Software in Spanish and Vietnamese, for instance, still lags behind and few computer manufacturers have included specialized keys to accommodate bilingual children, e.g. the upside-down question mark for Hispanic students. These issues take on enormous importance in city schools because of the populations they serve. If access to the technologies of the future is limited in these, then it will be that much more difficult to find gainful life-long employment later on, and computers simply evolve into one more gate keeper.

Our last set of conclusions is based on our comparison of the results found in this study with other surveys on the same issue. In the Spring of 1982 the NCES Fast Response Survey showed that the number of microcomputers available to public school students tripled between the Fall of 1980 and the Spring of 1982 to 120,000. At that time, 22% of the elementary schools and 65% of the secondary schools had a least one microcomputer.

Henry Jay Becker of Johns Hopkins University conducted a survey of over 2,000 schools and reported that in January of 1983 that 42% of the elementary schools and 77% of the junior/senior high schools had at least one microcomputer. In the summer of 1983, Market Data Retrieval of Westport, Connecticut conducted a telephone survey of every school district in the country. They found that 62% of the elementary schools, 81% of junior highs and 89% of senior high schools had at least one microcomputer. Although this survey of the Great City Schools found that 57% of the elementary schools and 88% of the secondary schools had computers, one should remember that these figures were gathered even more recently. As we pointed out earlier, the number of computers in the city schools increased over 10% from July to November.

City schools do not fare as well when one compares the number of students to computers. Becker found an average of 183:1 in elementary schools while

the Great Cities had an 863:1 ratio. At the secondary level, the Hopkins survey found 88:1 while the Great Cities showed 186:1.

If we compare course offerings in computer literacy and computer sciences we find that the Great Cities are doing as well as or better than other kinds of school systems. Becker found that 51% of the high schools taught computer literacy and 64% had courses in computer sciences. The Great City Schools have computer science courses in virtually all of its high schools, and computer literacy instruction in 51% of these schools.

Because the acquisition and implementation of computers is growing so rapidly it is difficult to construct comparative data. It is clear, however, that although city high schools have computers in almost every building and courses are now available, the number of computers to fill the need is far from sufficient.

INDIVIDUAL DISTRICT PROGRAMS

ALBUQUERQUE

Planning

A Bond Issue Plan for Computer Assisted Instruction (CAI) and Computer Managed Instruction (CMI) has been developed by Rudy Miller, the Computer Education Coordinator. In the area of CAI the goal is to develop computer literacy in grades K-12.

The General Education Plan is to conduct computer literacy training with students while computer applications are being designed for use in the basic curriculum. Computer Science courses currently offered by the Career Enrichment Center will then be updated and expanded under the Computer Education Plan. Occupational Education will be extended into the existing curricular for schools not previously served. Special Education will be using computers to individualize and reinforce current curriculum content and to provide innovative prosthetic devices or techniques for individual handicapped students. Gifted students will also participate in curriculum enrichment and in computer science through General Education.

Management

The management of technology is conducted by two divisions. The first, Instructional Services, under the direction of Rudy Miller, was established seven years ago and has approximately 15 staff members. The second, Data Services, is directed by Thomas Loveland and employs 14 staff members.

All requests for instructional hardware and software must be approved by the Instructional Division. PTAs cannot buy individual computers for schools until the computer literacy program is completed.

Implementation of the Computer Education Plan for 1983-84 has been initiated in the district according to the schedule delineated by the Computer Education Steering Committee. This committee is currently providing centralized coordination of all activities concerned with the Computer Education Bond Issue. For the 1983-84 school year, pilot sites have been selected according to specific criteria, pilot teachers have been trained, and bid specifications for the purchase of hardware have been developed. It will be necessary to hire a district-level professional to continue the coordination of the Computer Education implementation and to maximize its effectiveness.

Maintenance

Maintenance is most commonly furnished by suppliers although maintenance contracts exist for some systems. A new program is in process which will allow in-house maintenance of microcomputers.

Staff Training

The district has provided computer awareness workshops which include an introduction to Logo and the running of some sample programs. The University of New Mexico provides one and three-hour credit computer literacy courses and an introductory Logo course.

Staff training for pilot site teachers was conducted during the 1983 summer months. Additional training will take place in the Fall of 1983 for the remaining pilot site teachers and for other APS personnel who are interested. The plan anticipates that all teachers will have the opportunity to receive training during these next three years. Training models which have been negotiated and implemented include within-district workshops and UNM-affiliated coursework. All training sessions are planned for out-of-school hours due to budget constraints. In addition, technical assistance for pilot site teachers will be made available throughout the year by reallocating existing personnel or by assigning new personnel funded under current operational budgets. Chapter 2 monies will be used to provide some stipend monies for training.

Hardware

Apple IIs are the most common brand of micros found in the district. A few TRS 80s are also employed. Sixty-four DEC 10 terminals are used for instructional purposes while administrative applications are run through a Honeywell 6505 mainframe.

The purchase of additional, necessary hardware has been temporarily postponed to allow this district additional time in the bid process. A Request for Proposals has been released which encompasses the needs of component areas for hardware. This process has been time consuming but worthwhile in providing the best machines for the lowest price to the district. For the first year, purchase of a new mainframe computer will be under study by the Steering Committee.

Courseware

Most courseware is purchased through MECC with equipment vendors also supplying some software. Albuquerque is a member of the EPIE software review consortium.

Software evaluation was initiated one year ago and will be a continuous process. Major purchases of software will take place during this pilot year and in following years as the curriculum dictates. Chapter 2 monies will be used to provide additional curriculum software. Plans are being made for central housing and evaluation of curricular software within the district.

Budget

In FY81-82, local funds provided $3,000, state funds $290,000, and federal funds $20,000 for instructional technology. In FY82-83, the local contribution was $45,000, state was $350,000 and federal $20,000. The 1983-84 allocations are projected to be $60,000 from local funds, $400,000 from the state and $20,000 from federal funds. PTA contributions have been around $10,000 for the last two years and there have been little or no contributions from the private sector.

To complete the goals outlined in the Bond Issue Plan discussed earlier, the projected costs for FY83-84 and FY84-85 are almost $1.5 million each year for instructional applications. Approximately $1.3 million is budgeted for the various administrative applications.

ALBUQUERQUE

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	55 %	80 %
Ratio of students to computers	854 /1	473 /1
Number of courses offered in Computer Literacy	1	1
Number of courses offered in Computer Science	0	7
Number of students enrolled in the above courses	0	7,500
Number of teachers trained to teach Computer Literacy	305	142
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		x
Logo	x	
Pascal		x
Pilot		
RPG		x
Other		Assembly & Algol
Teacher certification in Computer Literacy	local yes	local yes

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication	x	
Electronic mail	x	x
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	x
Other		

ALBUQUERQUE

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report	x	
Test scoring	x	
IEP records	x	x
List others		
Student Non-Academic Records		
Vocational Counseling		x
Health Immunization	x	
Psychological test results	x	
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists		
Menu planning		
Inventory	x	
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout	x	x
Overdue notices		x
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists		
Budget Planning		
Collective negotiations		
Planning		
School boundry/Census information	x	
Enrollment projections	x	x
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules		x
Building/Classroom utilization	x	x
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	x
In-service information		
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	x
List others		
Research/Development		
Testing	x	
Research	x	
List others		

ATLANTA

Planning

Atlanta is in the process of developing a five-year plan for the purchase and use of high technology. A fifty-member commission appointed by the Superintendent and comprised of staff members from every department--teachers, principals, and parents--are writing the plan. The objective of the plan is to develop a philosophical framework and guidelines which the administration can use to make decisions regarding the direction the school system should follow in using technology--especially microcomputers.

Management

The Division of Research, Evaluation and Data Processing which is headed by Dr. Jarvis Barnes, Assistant Superintendent, in charge of Research, Evaluation and Data Processing (REDP) has had the responsibility of handling technology since 1979. At this time, procurement of hardware requires central office approval and requisitions must go through bid procedure. Most requests for MECC courseware are processed through REDP. Other software procurements are made directly through bids to vendors or publishers.

Maintenance

Maintenance is under supplier contract.

Staff Training

The district has done most of its own staff training this year totaling about 60 hours, with vendors and other agencies contributing about 10 hours each. Approximately 250 instructional staff members and 30 administrators have participated in the training this year.

Hardware

The IBM 3031-8 mainframe is used for administrative and instructional purposes. Approximately 200 terminals are located in various offices and school buildings. Half of these are used for instructional purposes, primarily in the secondary schools. Microcomputer brands are fairly evenly distributed between the TRS 80, Apple II, and Commodore PET with the IBM PC next in line. A few Hewlett-Packards and Texas Instruments have been purchased as well.

Courseware

Most of the courseware is obtained from publishers, some from vendors and little or none is received from other education agencies or produced within the district. Courseware which relates to basals is found to be the most valuable.

Budget

Four hundred thousand dollars is targeted for instructional applications of technology in 1983-84 and $500,000 is budgeted for 1984-85. Vocational Education spent a large amount--$800,000 in 1981-82 and plans to spend $10,000 both this year and next. Through the Adopt-A-School-Program, private contributions amount to about $65,000 a year with another $10-15,000 raised by individual schools and PTAs.

Expenditures for administrative technology have been about 1.5 million per year.

ATLANTA

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	40 %	94 %
Ratio of students to computers	369 /1	141 /1
Number of courses offered in Computer Literacy	1	1
Number of courses offered in Computer Science		2
Number of students enrolled in the above courses	75	250
Number of teachers trained to teach Computer Literacy		10
Computer Languages used for instruction:		
Basic	x	x
Cobol		
Fortran		
Logo	x	x
Pascal		x
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication	x	
Electronic mail		x
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

ATLANTA

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	x
Test scoring	x	.x
IEP records		
List others		
Student Non-Academic Records		
Vocational Counseling	x	
Health Immunization	x	
Psychological test results		
List others Attendance		x
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning		
Inventory	x	
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories		
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists	x	
Budget Planning		
Collective negotiations	x	
Planning		
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	x
Staff schedules	x	
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information		
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

BALTIMORE

Planning

A plan for the instructional and administrative use of technology was developed by the Office of Instructional Computing in 1981 and covers a period of five years. The plan calls for computer literacy in grades 3-12, course support at the secondary level and administrative student data available on an interactive basis to schools. Technology is distributed to those schools which have the greatest number of staff who have participated in the computer training workshops.

Management

The Office of Instructional Computing, headed by Jacob Schuchmann, under Deputy Superintendent for Educational Support Services, and Dr. Thomas Foster with a staff of three, and the Educational Data Center with a staff of 50, headed by Larnell Johnson, oversee computer applications in the district. All purchases are reviewed centrally and authorized for compatibility.

The Baltimore Department of Education must provide exhaustive purchase justification to obtain the needed approval from the Baltimore City Government.

Maintenance

A vendor agreement provided maintenance for administrative applications. Instructional computers are under warranty or maintained in-house.

Staff Training

The district has provided about 60 hours of training and vendors have supplied 45 hours for 165 instructional staff members in the 1982-83 school year. Approximately fifteen administrative staff had some kind of training during the year.

Hardware

The IBM 370/158 provides administrative support for the district as well as remote job entry vocational program information. Apple IIs and TRS 80s are found approximately in equal numbers and are used for instructional support, computer literacy and programming. There are a few additional miscellaneous computers. Over 50 Plato terminals were also used in the schools in 1982-83 but have recently been eliminated.

Courseware

Most courseware is obtained from other education agencies with some produced within the school district and little or none obtained from publishers or other vendors. MECC is found to be the most valuable source of courseware. The French/Smith Evaluation Form is used to review courseware.

Budget

Instructional technology in FY82-83 was funded $14,000 from local funds, $600,000 from state resources and $250,000 from federal funds. Corporate

contributions totaled $16,000 and PTAs gave $10,000. In the 1983-84 and 1984-85 school years, local support is expected to jump to $200,000 for instructional applications.

Administrative technology cost $2,200,000 in 1982-83 and will rise to $3,000,000 in two years.

BALTIMORE

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	14 %	83 %
Ratio of students to computers	1,429 /1	297 /1
Number of courses offered in Computer Literacy	0	0
Number of courses offered in Computer Science	0	6
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy	60	210
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		x
Logo	x	
Pascal		
Pilot		
RPG		x
Other		JCL
Teacher certification in Computer Literacy		

****

ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	
Telecommunication		
Electronic mail		x
Video Disc		
Robotics		
Optical Scanners	x	x
Word Processors		x
Other		

BALTIMORE

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report	x pilot	
Test scoring	x	
IEP records		x
List others		
Student Non-Academic Records		
Vocational Counseling		x
Health Immunization	x	
Psychological test results		
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling		
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning		
Inventory	x	
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists		
Budget Planning		
Collective negotiations		
Planning		
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules	x	
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files		
Leave records	x	
Certification information	x	
In-service information		
List others		
Business Functions		
Payroll		
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

BIRMINGHAM

Planning

Birmingham has no master plan for the implementation of technology. A plan was developed to train teachers in the use of computers but details are not available.

Management

The management of instructional applications of technology is in the Division of Program and Staff Development under the direction of Dr. Wayman Shiver, the Coordinator of Media Resources and Director of Instructional TV. No additional staff is assigned. Schools purchase micros with their own funds. There is no centralized control over types or brands of hardware or software which may be purchased.

The Division of Business and Finance controls administrative uses of technology and Bill Barnes manages Computer Services under this Division.

Maintenance

Maintenance is supplier furnished.

Staff Training

In-service training has been conducted primarily by the district. They have provided approximately 95 hours of instruction for both administrative and instructional staff. Other agencies have contributed about 20 hours of training and vendors about 9 hours.

Classes are taught during the summer with workshops and conferences provided by local universities, the Alabama Council on Computers in Education, and by vendors in their classrooms.

Approximately 150 administrative and 150 instructional staff members have taken training this year.

Hardware

Microcomputers used for instruction are primarily Apple IIs and TRS 80s with a few Commodore PETS and Ataris. Terminals are available for instructional use at three high schools. The IBM 370-138 is located in the Computer Center (Central Office) with terminals in the offices of Finance, Personnel, Business, Attendance and Textbooks.

Courseware

Most courseware is purchased through MECC publishers but other education agencies and the school district, itself, contribute additional materials. MECC is found to be the most valuable source of courseware because the content is

validated. The Microshift model is used to evaluate software by a system-wide Courseware Evaluation Committee.

Budget

Instructional applications of technology in FY1981-82 were financed by $5,000 from the Local Property Fund and $50,000 from Chapter II funds.

Figures for administrative costs are not provided.

BIRMINGHAM

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	51 %	100 %
Ratio of students to computers	564 /1	173 /1
Number of courses offered in Computer Literacy	0	0
Number of courses offered in Computer Science	0	3
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy	3	4
Computer Languages used for instruction:		
Basic	x	x
Cobol		
Fortran		
Logo		
Pascal		
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy		

****

ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	
Telecommunication	x	
Electronic mail		
Video Disc		
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

BIRMINGHAM

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report		x
Test scoring	x	x
IEP records		
List others Atrendance	x	
Student Non-Academic Records		
Vocational Counseling		
Health Immunization		
Psychological test results		
List others		
Transportation Functions		
Passenger lists		
Route/driver scheduling		
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch		
Eligibility lists		
Menu planning		
Inventory		
List others Development stages		
Library Functions		
Book inventories		
Book orders		
Book checkout		
Overdue notices		x
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories		
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures		x
Eligibility lists		
Budget Planning		
Collective negotiations		
Planning		
School boundry/Census information		
Enrollment projections		
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules		
Building/Classroom utilization		
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records		
Certification information	x	
In-service information		
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.		
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research		
List others		

BOSTON

Planning

Boston's Compact Electronic Learning Subcommittee has developed a three-year plan with the goal of placing a computer laboratory in every school in Boston by 1986. Computers are distributed to schools on a competitive basis. The schools submit plans which are reviewed and are funded according to quality of the plan.

Management

Under Deputy Superintendent James Caradinio, Division of Education and Employment are Bob Perlman, System Support Specialist/Teacher Coordinator and Marilyn Gardner, Computer Education Coordinator. They have been in charge of instructional applications since June 1982. Policy for computer configurations is set by the Computer Policy Committee. Albert Lau, Manager of Information Systems oversees the administrative applications of technology.

Maintenance

The maintenance of microcomputers is done both in-house in the microcomputer repair center and by vendors for equipment under warrantee.

Staff Training

Approximately 300 elementary, 300 secondary and 200 special education and vocational education teachers are prepared to teach computer literacy.

Boston offered 26 courses, each worth three graduate credits from local universities in 1982-83. These courses are staffed by Boston personnel and are taught at the city schools. More than 2,000 hours of training have been offered to instructional staff in the 82-83 school year as well as another 500 hours to administrative staff.

Hardware

There are about 800 Apple IIs, 200 DEC Rainbows, and 40 IBM PCs used for instruction as well as 36 terminals attached to the Digital 1170 and eight terminals with the IBM 35. All administrative applications are handled by an IBM 4341 with the exception of payroll, which is done by the City of Boston.

Courseware

Although no procedures have been developed to evaluate software prior to purchase, the materials found to be most valuable are those recommended by teachers who have previously used the software. Most of the courseware is purchased by individual schools from publishers and from other education agencies. Little or no courseware is developed by the district or purchased from vendors.

Budget

Approximately a half a million dollars was spent during the 1982-83 school year for instructional applications and that amount is projected for the two following school years. These funds have been, and will continue to be matched by corporate contributions and the city government.

The budget for administrative applications is $1.9 million.

BOSTON

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	11%	77%
Ratio of students to computers	848/1	101/1
Number of courses offered in Computer Literacy	2	2
Number of courses offered in Computer Science	1	4
Percent of students enrolled in the above courses	500	4500
Number of teachers trained to teach Computer Literacy	300	300
Computer Languages used for instruction:		
Basic		x
Cobol	x	
Fortran		
Logo		
Pascal		x
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy	yes-local	yes-local

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	
Telecommunication	x	
Electronic mail		x
Video Disc	x	
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

BOSTON

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	x
Test scoring	x	x
IEP records	x	x
List others		
Student Non-Academic Records		
Vocational Counseling		
Health Immunization		
Psychological test results	x	
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance		
List others		
Food Services		
Free/reduced priced lunch	x	x
Eligibility lists	x	x
Menu planning		
Inventory	x	x
List others		
Library Functions		
Book inventories		
Book orders	x	
Book checkout		
Overdue notices		
List others books lists	x	
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures		
Eligibility lists		
Budget Planning		
Collective negotiations	x	
Planning		
School boundry/Census information		
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules	x	
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information		
List others		
Business Functions		
Payroll		
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research		
List others		

Planning

A steering committee, which includes several Assistant Superintendents and the Director of the Bureau of Computer Education, is preparing a technology plan that will assure that the technological advances in information management and dissemination are fully integrated into the instructional, administrative and management activities of the system. The plan will cover a five-year period.

An advisory council made of parents and teachers provides input to the Director of Computer Education. Although there is no formal policy on the types or brands of computers which may be purchased for instruction, Apples and TRS 80s are generally recommended.

Management

Technology is the responsibility of three divisions. The Department of Information Processing Services, headed by Clifford E. Cox, Assistant Superintendent, employs 130 people. The Bureau of Computer Assisted Instruction has a staff of two, and was estabilised in the 1970s and is directed by Rita Cooney. The Bureau of Computer Education--Ted Gradolf as Director--came into existence in 1965 and is operated by two project people and two other staff members.

If Board money is used for the purchase of computers, the acquisition is processed centrally. Requisitions are analyzed by the Bureau of Purchases and a recommendation is made if the hardware or software is only available from one source. A closed bid process is enacted if the equipment or material is available from more than one other source.

There is no Board policy recommending type or brands of hardware and peripherals. Although purchases are controlled centrally, formal selection criteria have not been adopted to date.

Maintenance

Mainframe maintenance is by contract with the original vendor. Micros have been purchased with a 12-month maintenance contract. Next year, an in-house time and charges maintenance system is proposed.

Staff Training

Approximately 8,000 instructional staff members and 180 administrative staff have availed themselves of many hours of training. Most of those hours were provided by the district with other education agencies and vendors adding to the training options.

These opportunities have included basic introductory courses--data processing, DELTAK, programming (beginning and advanced) and JCL. Eight-week, half-day courses offering promotional credit have also been available.

Hardware

An IBM 3033 and 3031 are used for adminiministrative and business applications.

Assorted control units, card readers and 262 terminals are attached to Computer Education's IBM 370-158. A Univac 1100/10 with 542 terminals provides computer assisted instruction and a student information system. Various microcomputers are also used for both computer education and computer assisted instruction.

Courseware

Most microcomputer courseware is obtained through other education agencies and through publishers. The software purchased through MECC are found to be the most valuable.

Budget

In fiscal year 1981-82 and 1982-83, $1,200,000 was spent for the hardware and maintenance of the computers used in Computer Education alone. Data Processing costs were $689,974 in 1981-82, $1,029,000 in 1983-84 and $822,228 is budgeted for FY1983-84. No figures are available for the CAI budget.

CHICAGO

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	91 %	98 %
Ratio of students to computers	378 /1	235 /1
Number of courses offered in Computer Literacy	1	2
Number of courses offered in Computer Science	0	18
Number of students enrolled in the above courses		12,000
Number of teachers trained to teach Computer Literacy		
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran	x	x
Logo	x	x
Pascal		x
Pilot		
RPG		x
Other		APL & Assembler
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication	x	
Electronic mail		
Video Disc	x	
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

CHICAGO

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	x
Test scoring	x	
IEP records	x	x
List others		
Student Non-Academic Records		
Vocational Counseling		x
Health Immunization	x	
Psychological test results	x	
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling		
Vehicle performance and maintenance		
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists		
Menu planning		
Inventory	x	
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories		
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists		
Budget Planning		
Collective negotiations	x	
Planning		
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	x
Staff schedules	x	
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information		
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others P.O, bids, specifications, vendor lists, form letters, bond files, etc.		
Research/Development		
Testing	x	
Research	x	
List others		

CLEVELAND

Planning

Cleveland expects to develop a plan for the purchase and use of high technology sometime in the future.

Management

The Department of Management, Budget and Systems, directed by Bruce Anderson, has had responsibility for handling technology since August of 1982. The district and individual building principals share in the decisions as to what types and brands of hardware and software may be purchased. There are no particular brands of hardware recommended by the district.

Maintenance

Maintenance is supplier furnished.

Staff Training

Vendors have provided approximately 20 hours of staff training for 15 administrative staff members. This training has included text processing techniques and training to implement a library management system.

Hardware

Approximately 60 terminals attached to an IBM 370/129 mainframe are used for instructional purposes. Approximately 22 microcomputers of various brands are also used for instruction.

Courseware

There is no formal acquisition process for courseware.

Budget

Funds will be earmarked for instructional technology in the 1984-85 budget.

CLEVELAND

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	1 %	51 %
Ratio of students to computers	40,000 /1	457 /1
Number of courses offered in Computer Literacy	0	0
Number of courses offered in Computer Science	0	0
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy		
Computer Languages used for instruction:		
Basic		
Cobol		
Fortran		
Logo		
Pascal		
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy		

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		
Telecommunication	x	
Electronic mail		x
Video Disc		
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

CLEVELAND

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report	x	
Test scoring	x	
IEP records		
List others		
Student Non-Academic Records		
Vocational Counseling		
Health Immunization		
Psychological test results		
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning		
Inventory	x	
List others		
Library Functions		
Book inventories	x	
Book orders		
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	
Staff directories		
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists	x	
Budget Planning		
Collective negotiations	x	
Planning		
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules		
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files		
Leave records		
Certification information		
In-service information	x	
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing		
Research		
List others		

COLUMBUS

Planning

A Data Processing Steering Committee and a Technology Service Committee are developing a plan whose major emphasis is to establish priorities. Further details will soon be available.

Management

Howard Merriman, who is in charge of Planning, Development and Consultative Services (curriculum) is the moving force and coordinator of instructional computing. Jeff Pottinger is the Director of the Office of Management and Budget which oversees business and administrative applications.

Approval for purchasing hardware and software must come from the Technology Review Committee.

Maintenance

An extended warrantee has been purchased for equipment which includes a one-year on-site maintenance program. Staff is presently being trained so that maintenance can be done in-house in the future.

Staff Training

Approximately 600 administrative and instructional staff members have participated in 10-hour workshops provided by the district this year. In addition, a great many teachers and administrators took advantage of the extensive computer offerings this past Summer.

Hardware

A Honeywell mainframe--Data General Nova III and Apple IIs comprise the majority of the computer inventory in Columbus.

Courseware

Most materials are obtained from other education agencies, publishers, as well as those available from the public domain. MECC courseware is very valuable when the materials are applicable to curriculum goals, but in many cases the publishers provide more relevant software.

Budget

One-half million dollars has been allocated in FY1983-84 for instructional applications of technology. Another $320,000 has been contributed from banks and private corporations.

The 1983-84 lease for the Honeywell equipment is over $1.3 million.

COLUMBUS

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	25 %	100 %
Ratio of students to computers	300 /1	106 /1
Number of courses offered in Computer Literacy	1	1
Number of courses offered in Computer Science		2
Number of students enrolled in the above courses		100
Number of teachers trained to teach Computer Literacy		
Computer Languages used for instruction:		
Basic	x	x
Cobol		
Fortran		
Logo	x	x
Pascal		x
Pilot		x
RPG		
Other		
Teacher certification in Computer Literacy		

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	
Telecommunication	x	
Electronic mail		x
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

COLUMBUS

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	x
Test scoring	x	
IEP records	x	
List others attendance		
Student Non-Academic Records		
Vocational Counseling	x	
Health Immunization	x	
Psychological test results	x	
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning		
Inventory		
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		
Overdue notices		
List others book index cards		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures		
Eligibility lists		
Budget Planning		
Collective negotiations	x	
Planning		
School boundry/Census information	x	
Enrollment projections		
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules	x	
Building/Classroom utilization		
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information		
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

Planning

The district is in the process of developing a plan for the instructional use of technology. The five-year plan includes both computer literacy and computer assisted instruction. It is being written in-house with the assistance of consultants.

Management

The administrative applications of technology are under the direction of Alan Olkes, the Executive Director for Management Information, who has a staff of 170 people.

Instructional applications are under Gary Forrester, the Supervisor of the Computer Education Program and John Johnson who is in charge of the microcomputer project of Chapter 1.

There are no district policies regarding the brands of hardware acquisitions which may be purchased.

Computer equipment for instruction is purchased through each school's budget, at the discretion of the principal. Computers and software acquired through Chapter 1 funds are an exception as these purchases require committee review and approval.

Maintenance

Maintenance is contracted out for both the leased mainframe and the microcomputers.

Staff Training

The district has provided over a thousand hours of training for 700 instructional staff members, and 100 hours for 120 administrative staff. The offerings have included a one-day overview of instructional units for administrators and 15-hour workshops in the use of microcomputers for teachers.

Approximately 150 elementary teachers and 100 secondary teachers are now trained to teach computer literacy.

Hardware

An AS950 and an IBM 3038J are employed for administrative and business functions. Every school has a terminal with access to various student and administrative data banks. Microcomputers are primarily Ataris and Apple IIs.

Courseware

Most of the courseware is obtained from publishers and equipment vendors with little purchased from other education agencies or produced within the district. Potential software acquisitions are previewed at a central review site.

Budget

Approximately $957,000 was spent on instructional applications of technology in 1981-82 school year. Information regarding later years is not available.

Administrative applications cost more than six million dollars in FY1981-82, over seven million dollars in FY1982-83, and an increase of approximately one million dollars is projected for each of the two following years.

DADE COUNTY

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	100 %	100 %
Ratio of students to computers	313 /1	
Number of courses offered in Computer Literacy	3	2
Number of courses offered in Computer Science		5
Number of students enrolled in the above courses	7,500	15,000
Number of teachers trained to teach Computer Literacy	150	100
Computer Languages used for instruction:		
Basic	x	x
Cobol		
Fortran		
Logo	x	x
Pascal		x
Pilot	x	x
RPG		
Other		
Teacher certification in Computer Literacy	yes	yes

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	
Telecommunication	x	
Electronic mail	x	
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

DADE COUNTY

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	x
Test scoring	x	x
IEP records		
List others FTE and attendance		x
Student Non-Academic Records		
Vocational Counseling		x
Health Immunization	x	
Psychological test results		x
List others		
Transportation Functions		
Passenger lists	x	x
Route/driver scheduling	x	
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	x
Eligibility lists	x	x
Menu planning	x	
Inventory	x	
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		x
Overdue notices		x
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	x
Eligibility lists		x
Budget Planning		
Collective negotiations	x	
Planning		
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	x
Staff schedules	x	
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	x
Leave records	x	
Certification information	x	
In-service information	x	
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	x
Research	x	
List others		

Planning

Peat, Mariwick and Mitchell prepared an extensive plan on the use of computers with an emphasis on administrative applications for the Dallas Independent School District last year. The Director of Instructional Technology, Michael Vitale, has also written a plan for instructional computing and Donna Radspinner is working on a plan for cable utilization.

Management

Several divisions share the responsibility for technology development and implementation. These are: 1) Research, Evaluation and Information Systems, Bill Webster, Director; 2) Curriculum and Instruction, directed by Arturo Gutierrez with Dr. Michael Vitale as Director of Instructional Technology; 3) Data Processing with Clint Schumacher in charge; 4) Personnel (is the responsibility of John Santillo) and; 5) Management, Accounting, Maintenance under Bill Cotton.

There is a central authorization process regarding the purchase of equipment and software and all requisitions exceeding $5,000 must go out for bid.

Maintenance

At this time, maintenance is done both in-house, by vendors and by purchase orders. New procedures are being considered.

Staff Training

Rather than focusing on the goal of training all staff by a particular date or training a certain number of teachers per year, Dallas is training staff as they are needed to implement programs utilizing technology. Thus, two to three teachers from each high school and middle school have been trained to teach computer literacy and in a math module in grades k-4, 3 teachers in each school will be trained to teach Logo. Three hours of training per month are provided by various vendors.

Hardware

Data Processing and Management applications are on a Burrows 6700. Personnel and Payroll areon a time share basis. A mixture of mainframe terminals and microcomputers are used for instruction with TRS 80s comprising the majority of the micros.

Courseware

Most courseware is purchased from publishers although with the current acquisition of some Apples, some MECC courseware will be purchased this year. The district has also developed some remedial math and reading courseware.

Budget

During 1983-84, $850,000 is targeted for computer literacy and another $550,000 will be spent on hardware and software for specific instructional programs.

DALLAS

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	95 %	100 %
Ratio of students to computers	54 /1	79 /1
Number of courses offered in Computer Literacy	1	1
Number of courses offered in Computer Science		4
Number of students enrolled in the above courses		1000
Number of teachers trained to teach Computer Literacy		25
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		x
Logo	x	x
Pascal		x
Pilot		x
RPG		
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	
Telecommunication	x	x
Electronic mail		x
Video Disc		
Robotics	x	x
Optical Scanners	x	
Word Processors	x	
Other		

DALLAS

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report	x	
Test scoring	x	
IEP records	x	x
List others attendance	x	
Student Non-Academic Records		
Vocational Counseling	x	
Health Immunization		
Psychological test results	x	
List others		
Transportation Functions		
Passenger lists		
Route/driver scheduling		
Vehicle performance and maintenance		
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning		
Inventory	x	
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures		
Eligibility lists		
Budget Planning		
Collective negotiations	x	
Planning		
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules	x	
Building/Classroom utilization		
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information		
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

DENVER

Planning

A five-year plan for administrative and instructional applications of microcomputers was submitted to the Board in the Spring of 1983. Details of the plan will be available upon board approval.

Management

At this time technology is controlled by two departments:

1) Educational Data Services (EDS) under the direction of Dr. Barry Beal and
2) Educational Management Information Services (EMIS) under Tom Hansen.

All requisitions for micros are put out for bid twice a year--once in the Fall and again in the Spring. EMIS and EDS personnel review all computer related requisitions.

Maintenance

Denver channels all requests for maintenance from a consortium of 14 school districts to a contracted company. Denver has also trained 4 technicians to do in-house repairs and offers an 8-12 hour "First Aid for Micros" course to personnel so that simple problems such as loose circuit boards, etc., can be handled at the school.

Staff Training

Over 1,000 instructional and administrative staff members have received training provided by the district during 1982-83 school year.

Hardware

A Univac 1100/81 mainframe provides all financial, personnel and pupil personnel services. There is a preponderance of Apple computers although the list of recommended/approved computing equipment includes several brands. Several schools are part of a pilot project which allows the Apple microcomputers access to certain records kept by the Univac system.

Courseware

Educational software is provided by publishers, other education agencies and by the district itself. The materials provided by MECC are the most valuable as they are validated.

Budget

Approximately $1.3 million is budgeted for Educational Management Information Services. There are no funds designated for instructional computing acquisitions.

DENVER

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	64 %	100 %
Ratio of students to computers	235 /1	80 /1
Number of courses offered in Computer Literacy	1	1
Number of courses offered in Computer Science	1	7
Number of students enrolled in the above courses	6,000	4,000
Number of teachers trained to teach Computer Literacy	excess of 1,000	excess of 1,000
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		x
Logo	x	
Pascal		x
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication	x	
Electronic mail	x	x
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

DENVER

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	x
Test scoring		
IEP records		x
List others attendance, computing management instruction		

Student Non-Academic Records		
Vocational Counseling	x	x
Health Immunization	x	
Psychological test results		
List others Federal Projects, AFDC, attendance		

Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance		
List others		

Food Services		
Free/reduced priced lunch		
Eligibility lists	x	
Menu planning		
Inventory	x	
List others		

Library Functions		
Book inventories		x
Book orders	x	
Book checkout		
Overdue notices		x
List others		

Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists	x	

Budget Planning		
Collective negotiations	x	
Planning	x	
School boundry/Census information	x	
Enrollment projections	x	
List others		

Scheduling Functions		
Class schedules	x	
Staff schedules	x	
Building/Classroom utilization	x	
List others		

Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information	x	
List others		

Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		

Research/Development		
Testing		
Research		
List others		

DETROIT

Planning

In the Spring of 1931, a Computer Instruction Task Force consisting of staff members, consultants from universities and intermediate school districts devised a plan which directed the district to move as quickly and carefully as possible to implement technology in as many courses as possible in Detroit Public Schools. Technology was integrated into the curriculum, system objectives were outlined, most of which have been met at this time.

Management

A department of technology was instituted July 1, 1983. Prior to this time, however, the Instructional Computing Committees and Cecil Good in the district reading program recommended that Apples be purchased to assure service, maintenance, and software compatibility (this includes purchases made by PTAs). Consequently, central approval is not needed regarding type and brands. All software is thoroughly previewed and an approved list is distributed to schools. Purchases are only made from that list.

The Data Processing Department, under the Division of Finance, is responsible for the business and administrative computer applications.

Maintenance

Calls for the repair of micros are processed centrally so that equipment exchange can take place if necessary. The equipment is repaired in-house by trained staff if possible, and a maintenance agreement with a local company provides backup service.

Staff Training

A great deal of staff training is and has been provided by the district. Over 6,000 teachers have participated in at least one workshop. Two hundred principals have had at least a 15-hour training program. Many principals are setting up independent in-service courses. In addition, a group of 32 people, chosen from many applicants, are receiving reimbursement for tuition at Wayne State University for study in computer science. Another 500 teachers have participated in interactive video conferences on computer literacy provided by the University of Michigan.

Approximately 500 teachers are now trained to teach computer literacy.

Hardware

The Burroughs mainframe is used for business, administrative and some instructional purposes. Apple microcomputers are purchased for most academic applications. A micro is in place in every school. Computer labs are established in several schools and all have optical card scanners. District policy directs the acquisition of basic equipment but principals can add peripherals, color, etc., themselves.

Courseware

Publishers provide most of the courseware for the school system with MECC closely behind. Some software is also purchased from vendors but very little is produced by the district itself. Although most software is available through publishers, that purchased through MECC is generally found to be of higher quality because of MECC's thorough review process. The district, as mentioned earlier, reviews all software prior to purchase and does look for race and sex bias, but as yet, they do not have formal guidelines to help determine bias.

Budget

Local, state and federal funds provided 2.5 million dollars for instructional applications of technology dollars in the 1982-83 school year and the same amount will be spent next year. Corporate contributions for instructional technology have exceeded $250,000.

General fund expenditures for administrative and business purposes have exceeded $2 million since 1981 and are expected to be $2.6 million in the 1983-84 school year.

DETROIT

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	100 %	100 %
Ratio of students to computers	214 /1	196/1
Number of courses offered in Computer Literacy		
Number of courses offered in Computer Science		
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy	total of 500	total of 500
Computer Languages used for instruction:		
Basic		x
Cobol		x
Fortran		
Logo	x	x
Pascal		
Pilot		x
RPG		
Other		
Teacher certification in Computer Literacy		

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication	x	
Electronic mail	x	
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

DETROIT

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	x
Test scoring	x	x
IEP records	x	x
List others Student Mgmt.	System	x
Student Non-Academic Records		
Vocational Counseling	x	x
Health Immunization	x	x
Psychological test results	x	x
List others		
Transportation Functions		
Passenger lists		
Route/driver scheduling		
Vehicle performance and maintenance		
List others		
Food Services		
Free/reduced priced lunch	x	x
Eligibility lists	x	x
Menu planning	x	x
Inventory	x	x
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		x
Overdue notices		x
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists	x	
Budget Planning		
Collective negotiations	x	
Planning	x	
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	x
Staff schedules	x	x
Building/Classroom utilization	x	x
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information		
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

LOS ANGELES

Planning

A five-year plan for computer literacy is being developed by staff members with the assistance of a consultant. The Computer Literacy Program will begin at the fifth grade level and will provide a foundation through the training of teachers, provision of a minimum level of equipment and the instruction of students.

Some of the objectives of the fifth grade curriculum, which is part of the K-12 Computer Literacy Continuum are: to recognize specific uses of computers in a variety of fields; to identify components of a computer; to identify and use numbers on a key board; to demonstrate proper care of software and hardware; to use and interact with a drill and practice; to implement a tutorial and simulation program.

Management

The Information Services Division, David W. Koch , Director with a staff of 210 has had responsibility for the administrative applications of technology since 1982.

The Computer Literacy Program for the 1982-84 school year is coordinated by Dr. Roy Nakawatase and two teacher advisors.

Requests for hardware are approved by the Computer Acquisition Review Committee and let out for bid.

Maintenance

Repairs are completed by vendors or a third party contractor.

Staff Training

Both the district and vendors have each provided over a thousand hours each of computer training and other agencies have given another 500 hours of instruction to over 3,000 instructional staff members and 20 administrators. A 32-hour in-service training course is provided to fifth grade teachers.

Hardware

Various administrative applications use a Univac 1100/60EZ, IBM 370-158, HP 3000 (3), TI 990 (150), PDP 11 and Microdata.

Approximately 350 TRS 80s, 100 Apples, another 150 micros of various brands and Teletype and DEC terminals are used for instruction.

Courseware

Publishers, vendors and other education agencies are all sources of software. Publishers are found to be the most valuable source. School district personnel have not yet had an opportunity to develop materials.

Budget

Information has not been provided.

LOS ANGELES

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	12 %	65 %
Ratio of students to computers	4,000 /1	420 /1
Number of courses offered in Computer Literacy	0	5
Number of courses offered in Computer Science	0	40
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy	311	299
Computer Languages used for instruction:		
Basic		x
Cobol		
Fortran	x	
Logo		x
Pascal		x
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		
Telecommunication	x	x
Electronic mail		x
Video Disc		
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

LOS ANGELES

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report		x
Test scoring	x	
IEP records	x	x
List others		
Student Non-Academic Records		
Vocational Counseling		
Health Immunization		x
Psychological test results		
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	x
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	x
Eligibility lists	x	
Menu planning		
Inventory	x	
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	x
Pupil directories		x
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists	x	x
Budget Planning		
Collective negotiations		
Planning	x	
School boundry/Census information	x	
Enrollment projections		
List others		
Scheduling Functions		
Class schedules	x	x
Staff schedules		
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information		
List others Benefits		
Business Functions		
Payroll	x	x
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

MEMPHIS

Planning

Several plans have been developed for the use of data processing and computer applications. These include plans for the 1) Personnel Payroll Information System, 2) Instructional Information System, 3) Pupil Services Information System, 4) Financial Information Management System. There is also an Instructional Studies Computer Education Plan. The development of the DP plans began several years ago and include phases through 1984. IBM originally assisted the district in system analysis and planning strategies. More recently, the district has done the planning in-house using many of the IBM techniques and strategies in "top-down" planning.

Management

Business and administrative applications are under the direction of the Director of Computer Services, Jack Merrill. Dr. David Moore of the Division of Computer Education was assigned responsibility on July 1, 1983, for instructional applications.

Acquisitions are processed through different committees with oversight by Roy Holt--the Deputy Superintendent and the Superintendent's Executive Council. Bids go out for most purchases and board action is generally required for bids over $10,000.

Recommendations for instructional computer configurations are made by the Division of Computer Education but principals may make independent decisions regarding purchases.

Staff Training

Approximately 100 instructional staff members have shared 50 hours of training provided by the school district and 200 hours provided by vendors. An increasing percent of teachers are trained to teach computer literacy.

Hardware

Franklin, TI 99/4A and Apple II microcomputers along with TSC and Hewlett-Packard terminals are used for instructional purposes. An IBM mainframe, Texas Instruments, and PC micros support most administrative applications.

Courseware

Courseware is acquired equally from publishers, equipment vendors, other education agencies as well as from the school district itself. The most valuable source of courseware is perceived to be that purchased through MECC. There is a software clearinghouse in the district but the evaluation procedures do not screen race and sex bias.

Budget

Local funds contributed $394,000 in the 1982-83 school year for instructional technology and will follow with $110,000 next year with the state providing $309,000 this year and $650,000 next year. Federal funds provided $750,000 for computer applications this year and $255,000 is expected next year. Corporate contributions were $10,000 this year with goals of doubling that amount in the following years with similar expectations for the PTA $4,000 contribution in 1982-83.

In total, the district spent almost a million and a half dollars on instructional technology in 1982-83, and expects to spend $1.1 million the following year. Over $2 million for administrative data processing was budgeted this year with $3 million planned for the 1983-84 school budget.

MEMPHIS

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	100 %	100 %
Ratio of students to computers	133/1	71/1
Number of courses offered in Computer Literacy	1	2
Number of courses offered in Computer Science		6
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy	400	350
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		x
Logo		
Pascal		x
Pilot		
RPG		x
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	
Telecommunication	x	x
Electronic mail		x
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

MEMPHIS

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report	x	
Test scoring	x	x
IEP records	x	
List others		
Student Non-Academic Records		
Vocational Counseling	x	
Health Immunization		
Psychological test results	x	
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling		
Vehicle performance and maintenance		
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning	x	
Inventory	x	
List others Cafeteria profit and loss		
Library Functions		
Book inventories		x
Book orders		x
Book checkout		x
Overdue notices		x
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories		
List others student labels		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists	x	
Budget Planning		
Collective negotiations	x	
Planning	x	
School boundry/Census information	x	
Enrollment projections	x	
List others Count of subject and pupil load by teacher		
Scheduling Functions		
Class schedules	x	
Staff schedules	x	
Building/Classroom utilization		
List others Daily, monthly, yearly schedules		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information	x	
List others Transfer, turnover, statistics substitute lists		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others School activity accounting x		
Research/Development		
Testing	x	
Research	x	
List others		

MILWAUKEE

Planning

A plan for the instructional use of computers and technology was developed in the summer of 1983. A committee comprised of teachers, principals, purchasing, data processing, special education, vocational education and other personnel will prepare the proposal.

Another plan for administrative applications will be developed early in 1984.

Management

The Data Processing Division, whose name is soon to become the Information Systems Division, is directed by Gerald Chrisman (effective 10/17/83). He is responsible for all administrative and business functions and has oversight of instructional applications as well. Vince O'Connor, Mathematics Curriculum Specialist functions as chairperson of the Instructional Computer Steering Committee which is an inter-divisional forum concerned with the day-to-day operations and short range goals of instructional computing in the district.

At this time, administrative requisitions for technology are approved by Data Processing. Very large applications, however, are reviewed by the Computer System Steering Committee which is comprised of the Superintendent, Chrisman and others. Requests for instructional applications are submitted in the form of a proposal to the Instructional Committee and are often referred to the larger Steering Committee.

At this time, there is no formal policy regarding the distribution of technology but disbursement began with the high schools, middle schools followed, and now the elementary schools are receiving computers. Computers purchased with Chapter I funds do not require DP approval but are approved by the Instructional Committee.

There is no district policy regarding the brands or sources of hardware or software which may be purchased.

Maintenance

Microcomputers are brought to DP for maintenance and are repaired in-house if possible. Otherwise, they are sent to an authorized dealer for service. Maintenance locations are selected by competitive bidding.

Staff Training

Over 1,000 teachers have participated in 96 hours of instruction offered by the district. Training in computer literacy, computer methodology and introductory and advanced Basic has been provided.

Although most administrators have educated themselves in the use of computers and other forms of technology, 15 administrative staff members have participated in about 24 hours of training offered by the district.

Hardware

IBM mainframes and CPT word processors are used for administrative applications. A VAX 750 and PDP 11 along with many Apples IIs and II-Es and a few TRS 80s are used for instruction.

Courseware

Most courseware is purchased through MECC and it is found to be the most valuable. Additional materials are purchased from publishers with little obtained from vendors or developed within the district. An exception, however, is Washington High School which does develop courseware.

Budget

Between 1981 and 1984, property taxes contributed $150,000, $190,000 and $180,000 respectively for instructional computers. General state aid provided $100,000, $130,000, $120,000 respectively for instructional uses and federal funds added $70,000 in 1981-82 and $240,000 in 1982-83. Administrative applications were supported with $300,000, $330,000 and $390,000 in property taxes during those years and the state provided another $200,000, $220,000 and $260,000.

MILWAUKEE

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	25 %	100 %
Ratio of students to computers	923/1	76/1
Number of courses offered in Computer Literacy	3	1
Number of courses offered in Computer Science	4	7
Number of students enrolled in the above courses	480	1,200
Number of teachers trained to teach Computer Literacy	10	40
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		x
Logo	x	x
Pascal		x
Pilot		x
RPG		x
Other	Turtle	
Teacher certification in Computer Literacy	yes	yes

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication	x	
Electronic mail		x
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

MILWAUKEE

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	x
Test scoring	x	
IEP records	x	
List others		
Student Non-Academic Records		
Vocational Counseling		
Health Immunization	x	
Psychological test results	x	
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance		
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning		
Inventory	x	
List others		
Library Functions		
Book inventories		
Book orders		
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	x
Staff directories	x	x
Pupil directories	x	x
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures		
Eligibility lists		
Budget Planning		
Collective negotiations	x	
Planning	x	
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	x
Staff schedules		
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records		
Certification information	x	
In-service information		
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

MINNEAPOLIS

Planning

Minnesota state law requires every school district to develop a technology plan. The Minneapolis school district has parts of a five-year plan written and expects to complete it during the 1983-84 school year.

Management

Dick Juliander is in charge of Management Support and Data Processing Services and Educational Support Services is directed by Sally Sloane.

Hardware is purchased and distributed centrally in large quantities and must be approved by the Board. Software is purchased through MECC and does not require Board approval.

Maintenance

Maintenance is provided in-house as the Minneapolis schools are designated as an Apple Supply and Maintenance Center.

Staff Training

Last year, three full days of training were provided by the district for 550 teachers and four days for all 150 principals and assistant principals.

Hardware

Two Honeywell minicomputers are used for administrative purposes. Burroughs equipment is also used by a consortium of 7 school districts of which Minneapolis is one. Hewlett-Packard terminals along with Apples are used for instructional purposes.

Courseware

Most courseware is purchased through MECC.

Budget

The general fund contributed $432,000 to administrative applications of technology in FY82-83 and the capital fund invested another $454,000. The 1983-84 budget calls for $438,000 and $523,000 from the general and capital funds for administrative functions.

Eight hundred thousand dollars was budgeted in 1982-83 for instructional computers and courseware with another $50,000 for staff training.

MINNEAPOLIS

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	100 %	100 %
Ratio of students to computers by end of 83-84--school year	63/1	63/1
Number of courses offered in Computer Literacy		
Number of courses offered in Computer Science		3
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy		
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		x
Logo	x	x
Pascal	x	x
Pilot		
RPG		x
Other		
Teacher certification in Computer Literacy		

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	
Telecommunication		
Electronic mail	x	
Video Disc		
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

MINNEAPOLIS

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	
Test scoring	x	
IEP records	x	
List others Attendance		
Student Non-Academic Records		
Vocational Counseling	x	
Health Immunization	x	
Psychological test results		
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling		
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	future	
Eligibility lists	"	
Menu planning		
Inventory	x	
List others		
Library Functions		
Book inventories	future	
Book orders	"	
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories		
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures		
Eligibility lists		
Budget Planning		
Collective negotiations	x	
Planning	x	
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules	x	
Building/Classroom utilization		
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information		
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

NASHVILLE

Planning

At this time Nashville does not have a formal plan for the development and implementation of technology. They are hopeful that one will be developed in the near future.

Management

The management of technology is handled by five divisions: 1) Instructional Services, 2) Audio Visual Services, 3) Program and Staff Development, 4) Business Services and 5) Data Processing. Technology requisitions are processed through regular centralized purchasing channels. Thus far, the PTA has purchased all microcomputers for school use and these acquisitions are not centrally processed. AV services acquires instructional software while DP leases from IBM or a third party. Computer configurations decisions are left to the building principal.

Maintenance

Vendors provide maintenance in all cases at this time. An in-house maintenance person has been requested.

Staff Training

There has been no in-service training provided through the district.

Hardware

Microcomputers are primarily TRS 80s with some Apple IIs. IBM 4300 terminals are also available for instructional use. An NCS Sentry 70 optical scanner is used for test scoring, attendance and scheduling.

Courseware

The primary source of courseware is MECC with some additional purchases acquired from publishers.

Budget

Budget information is not available.

NASHVILLE

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	24 %	42 %
Ratio of students to computers	705 /1	284 /1
Number of courses offered in Computer Literacy	1	2
Number of courses offered in Computer Science	2	10
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy	450	175
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		x
Logo	x	
Pascal		x
Pilot		x
RPG		x
Other		
Teacher certification in Computer Literacy		

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication		
Electronic mail		
Video Disc		
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

NASHVILLE

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report		
Test scoring	x	
IEP records	x	
List others Special Ed. Info. Syst.		
Student Non-Academic Records		
Vocational Counseling		
Health Immunization		
Psychological test results	x	
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning		
Inventory	x	
List others Food Service Accounting, Accounts Payable		
Library Functions		
Book inventories		
Book orders	x	
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists		
Budget Planning		
Collective negotiations	x	
Planning	x	
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules		
Building/Classroom utilization		
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information		
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.		
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

NEW ORLEANS

Planning

A three-year plan for the purchase and use of high technology is being completed. The plan will extend to July of 1986 and is being developed by in-house staff and consultants.

Management

The management of administrative applications of high technology is assigned to the Division of Business and Finance under the direction of Dr. B. Gupta. Rose Drill Peterson, Director of Research and Development, is in charge of the instructional use of computers. The distribution of computers is handled by each area superintendent who selects the schools in which the hardware will be placed. In addition, individual schools, through fund raising activities, generate monies to purchase computers.

All purchases are made through the Division of Finance but particular types of brands of hardware of software are not required.

Maintenance

Suppliers provide all maintenance.

Staff Training

No information is available.

Hardware

An IBM 4341 supports all financial applications as well as various student and school data bases.

Apples, TRS 80s, Commodores, PETS, Franklin Aces are used for instruction.

Budget

Information has not been provided.

NEW ORLEANS

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	89%	43%
Ratio of students to computers	2000/1	277/1
Number of courses offered in Computer Literacy		1
Number of courses offered in Computer Science		1
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy		
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		
Logo		
Pascal		
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	
Telecommunication		x
Electronic mail		x
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

NEW ORLEANS

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report	x	
Test scoring	x	
IEP records	x	
List others Attendance		
Student Non-Academic Records		
Vocational Counseling	x	
Health Immunization		x
Psychological test results		x
List others Special Ed. Title I		
Transportation Functions		
Passenger lists		x
Route/driver scheduling	x	
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning	x	
Inventory	x	
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout	x	
Overdue notices		x
List others		
Public Relations Area		
Mailing lists		
Staff directories		
Pupil directories		
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists	x	
Budget Planning		
Collective negotiations	x	
Planning	x	x
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules	x	
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information	x	
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

NEW YORK CITY

Planning

A plan to coordinate the instructional uses of computer technologies was devised by district personnel and consultants for 1983 and 1984. The plan included the formation of a central unit which would offer to the broad Computer and Information Sciences Unit (CISU) a range of technical and curriculum related services for assisting school personnel in planning computer-assisted instruction.

Management

The Computer and Information Sciences Unit in the Division of Curriculum and Instruction is headed by the Acting Assistant Director, Michael P. Ryan. CISU makes recommendations for computer configurations but the final decision is at the individual district level.

Maintenance

The CIS unit does their own repairs with donated vendor support.

Staff Training

New York City schools have provided over 5,000 hours of computer training to more than 5,000 administrative and instructional staff members. Courses in Logo, Basic, Pascal, Software evaluation and administrative applications were offered.

Hardware

Presently, the Central Board of Education has six brands under contract: IBM, Apple, Radio Shack, Texas Instrument and Atari. It is estimated that there are over 10,000 microcomputers in the schools.

Courseware

Schools may purchase courseware from a list approved by the CIS unit. User-groups are seen as the most valuable source of software.

Budget

Information is not provided.

NEW YORK CITY

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers		
Ratio of students to computers		
Number of courses offered in Computer Literacy		
Number of courses offered in Computer Science		
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy		
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		x
Logo	x	x
Pascal		x
Pilot		x
RPG		x
Other		AAS, APL
Teacher certification in Computer Literacy		

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	x
Telecommunication	x	x
Electronic mail	x	x
Video Disc		x
Robotics		x
Optical Scanners	x	
Word Processors	x	
Other		

NORFOLK

Planning

At this time a 10-year plan for instructional computing/technology is under development. A Financial Management Information System (FMIS) was approved in the Spring of 1981 and this 5-year plan is now underway. This system will provide financial data for planning, reports, decision-making, development and monitoring of programs, and controlling expenditures.

Management

There are two primary organization entities:

1) Management Information and Pupil Support (MIPS) and 2) Instructional Support (IS) both under the direction of division-level Assistant Superintendents, with responsibility for computers and technology. These duties were assigned prior to 1970 but substantial reassignment occurred in 1978 and 1981. Procurement of hardware and software is done through a bid process after review for technical and curricular compatibility by professional staff, often up through the division head level.

Staff Training

The district has provided 260 hours of training this year for 126 instructional staff members and 64 hours for 17 administrators. Four secondary staff members are trained to teach computer literacy as are five vocational education teachers. The training courses are noncredit offerings in computer literacy.

Hardware

Apple IIs and the Hewlett-Packard 2000 terminals are used for instructional purposes; administrative research and testing functions are supported by major mainframe IBM 4331 equipment, while guidance and instruction division applications are supported by the Hewlett-Packard 2000 teleprocessing minicomputer system and the micros. However, the minicomputer also serves research, testing and evaluation functions and a small IBM 1130 serves vocational education. The National Computer System Sentry 7015 optical code-recognition document scanner system has both administrative and instructional applications.

Courseware

Most of the courseware is developed within the district and is found to be more valuable because it is tailored to the curricular needs. Other sources of courseware are publishers, vendors and other education agencies.

Budget

Approximately $645,000 in FY82-83, $567,000 in FY83-84 and $601,000 in the FY84-85 school year has been allocated from the general fund for computers, peripherals, telecommunications, and word processing. In addition, federal categorical grants of nearly $287,000, as well as foundation and PTA contributions of

over $40,000 added to the FY82-83 totals; almost a million dollars was spent on instructional technology this FY82-83. Administrative applications required about $270,000 in the 1982-83 school year.

Maintenance

Maintenance is supplied through supplier contract.

NORFOLK

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	65 %	100 %
Ratio of students to computers	256 /1	140 /1
Number of courses offered in Computer Literacy	0	1
Number of courses offered in Computer Science	0	3
Number of students enrolled in the above courses		220
Number of teachers trained to teach Computer Literacy		4
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		
Logo		x
Pascal		
Pilot		
RPG		x
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	x
Telecommunication	x	x
Electronic mail		x
Video Disc	x	x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

NORFOLK

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report	x	
Test scoring	x	
IEP records		
List others		

Student Non-Academic Records		
Vocational Counseling		x
Health Immunization	x	
Psychological test results	x	
List others Attendance		

Transportation Functions		
Passenger lists		
Route/driver scheduling		
Vehicle performance and maintenance		
List others		

Food Services		
Free/reduced priced lunch	x	
Eligibility lists		
Menu planning		
Inventory	x	
List others		

Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		
Overdue notices		
List others		

Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists		

Budget Planning		
Collective negotiations		
Planning	x	
School boundry/Census information		
Enrollment projections	x	
List others		

Scheduling Functions		
Class schedules	x	
Staff schedules	x	
Building/Classroom utilization	x	
List others		

Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information	x	
List others		

Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.		
Inventory, Reports (Federal, State, Board)	x	
List others		

Research/Development		
Testing	x	
Research	x	
List others Pupil Assignment Planning		

OAKLAND

Planning

A curriculum computing Committee of 15-20 people comprised of representatives from Data Processing, Curriculum and Instruction, Science, Math, Reading and the teaching staff directed by I.B. Ibrahim, Microcomputer Coordinator,is developing a plan to aid in the purchase of software and hardware.

Both Arthur Young and Price Waterhouse have written plans for administrative applications of technology. Currently, the district is implementing plans for several functions. These include: 1) on-line student attendance; 2) position control (personnel); 3) accounts payable; 4) cafeteria profit and accounting; 5) word processing (15 stations in 21 offices have just been installed.)

Management

The Curriculum Computing Committee reviews and approves all requisitions for hardware and software. Software cannot be purchased until it is previewed. The division of Data Processing, Jerry Ardissone, Director, oversees all administrative uses of technology. Although Ardissone sits on the Curriculum Computing Committee, the two areas (DP and Curriculum & Instruction) operate very interdependently through the coordination provided by Ibrahim.

Maintenance

Mainframe maintenance is done on a contracted basis with the supplier. There is no umbrella maintenance contract for micros but such an arrangement is being considered. Microcomputer maintenance is handled by vendors and maintenance contract.

Staff Training

The district provided a 6-week intensive training course for 45 teachers on the use of various micros and their interaction with the curriculum. In addition, teachers from each school were given training by Apple on the use of their computers. Approximately 28 support staff were trained in word processing.

The district is opening a technology training center in October, 1983, to train all instructional and administrative staff on the diverse utilizations of computers.

Hardware

Honeywell provides the mainframe support for various administrative applications, and a NCS Sentry 7000 optical scanner is used for the pupil attendance system. Additionally, there are some microcomputer systems in administrative offices whch include: a) Research Department (DMS-DSC); b) Cafeteria (two IBM PCs and a display writer, a Datapoint 1800); c) Buildings and Grounds (a Northstar Horizon); d) Purchasing (two IBMs); e) State and Federal (an IBM), and f) Learning Resources (IBM display writer).

Apples, Commodore PETS and TRS 80s are most frequently purchased for instructional purposes. There were 214 PETS and 156 TRS 80s, 117 Apple IIs in July 1983. Ataris totaled 21 and a Dolphin system with 12 terminals from TAC was installed this year.

Courseware

Most courseware is acquired from publishers with equipment vendors and other education agencies also providing some software. Little or no courseware is produced within the district. There are no provisions made for the evaluation of race and sex bias at this time.

Budget

In FY81-82 more than $250,000 was spent on microcomputers and software. Thus far the approximate expenditure for microcomputers in 1982-83 is $780,000.

OAKLAND

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	100 %	100 %
Ratio of students to computers	134 /1	71 /1
Number of courses offered in Computer Literacy		
Number of courses offered in Computer Science		
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy	100+	
Computer Languages used for instruction:		
Basic	x	x
Cobol		
Fortran		x
Logo		x
Pascal		
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	
Telecommunication	x	
Electronic mail	x	x
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

OAKLAND

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	
Test scoring	x	x
IEP records		
List others		

Student Non-Academic Records		
Vocational Counseling	x	
Health Immunization		
Psychological test results		
List others		

Transportation Functions		
Passenger lists		
Route/driver scheduling	x	
Vehicle performance and maintenance	x	
List others Energy Consumption		

Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning	x	
Inventory	x	
List others		

Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		
Overdue notices		
List others film orders		

Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories		
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures		
Eligibility lists		

Budget Planning		
Collective negotiations	x	
Planning	x	
School boundry/Census information		
Enrollment projections		
List others		

Scheduling Functions		
Class schedules	x	x
Staff schedules	x	x
Building/Classroom utilization	x	
List others attendance		

Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information	x	
List others		

Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)		
List others		

Research/Development		
Testing	x	
Research	x	
List others		

PHILADELPHIA

Planning

In April of 1983, the school district of Philadelphia published a policy statement on microcomputers. The goals in the policy include:

1. the opportunity for every child to work with a microcomputer
2. student awareness of the technological community and the applications of computers
3. student understanding of a computer's structure and processes
4. student awareness and preparation for jobs in the computer field
5. staff training in the use of computers
6. enhanced student development of disciplined thinking and problem solving
7. expansion of courses in computer literacy and computer science as well as the expansion of management programs and information retrieval
8. use of the computer as an effective and economical tool for instruction

A data processing plan was implemented in 1981 and covers applications through 1984. Details can be obtained from Richard Wallover.

Management

The management of technology is conducted by two divisions. The first, headed by Mrs. Arlene Kramer, is the Division of Computer Science Technology and the second is Administrative Data Processing directed by Mr. Richard Wallover. These responsibilities were assigned in 1983 and 1976 respectively.

Micros and peripherals can only be purchased from an approved list reviewed periodically by the hardware committee which consists of the Associate Superintendents or their representatives. Requisitions for hardware are submitted to the Associate, or District Superintendent. After approval is given, the request is reviewed by the Division of Computer Science Tecnnology and sent back to the appropriate Associate who gives final approval and forwards the request to purchasing. Software purchases over $75 follow similar procedures but the materials must be ordered from an approved list developed and reviewed periodically by the software committee. The committees are also responsible for updating inventories.

Maintenance

Microcomputer maintenance is contracted and monitored by the Department of School Computer Services. The district is investigating a training program which will provide maintenance and repair of microcomputers in the Vocational Training and Skills Centers. The maintenance of data processing equipment is furnished by the vendor.

Staff Training

Staff development is encouraged by directive but microcomputers cannot be purchased unless the school has personnel trained to use them. A complete differentiated staff development program is planned for all administrators. It will cover applications of computers in education, basic concepts of hardware, the uses and management of computers in the classroom and an overview of available software. Several in-depth courses are planned for teachers including such aspects of the educational computing program as: CAI, CMI, Programming in BASIC, LOGO and Pascal, Word Processing, Spreadsheet Applications.

Hardware

Hewlett-Packard 3000, IBM Personal Computers, Apple IIs and TRS 80s are used for Instructional Aids. Medium scale, general purpose Digital computers are employed for data processing.

Courseware

Some courseware has been developed within the district. Software vendors and other agencies provide some additional materials. A plan to evaluate software prior to purchase is presently being developed. At this time, race and sex bias in courseware is not evaluated formally.

Budget

Approximately $3.2 million dollars is budgeted for data processing from the general fund with an additional $220,000 in federal funds designated for personnel costs. Information is not available on instructional computing expenditures.

PHILADELPHIA

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers		93%
Ratio of students to computers		
Number of courses offered in Computer Literacy	0	1
Number of courses offered in Computer Science		4
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy		
Computer Languages used for instruction:		
Basic	x	x
Cobol		
Fortran		
Logo	x	
Pascal		x
Pilot		x
RPG		
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication	x	
Electronic mail		x
Video Disc		x
Robotics		x
Optical Scanners	x	
Word Processors	x	
Other		

PHILADELPHIA

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report	x	
Test scoring	x	
IEP records	x	
List others Data Proc: Student directory, student absences by subject		
Student Non-Academic Records		
Vocational Counseling		
Health Immunization	x	
Psychological test results		
List others		

Transportation Functions		
Passenger lists	x	
Route/driver scheduling		
Vehicle performance and maintenance		
List others		

Food Services		
Free/reduced priced lunch		
Eligibility lists		
Menu planning		
Inventory		
List others Data Proc: Property Inventory of Food Services Equip.		

Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		
Overdue notices		
List others		

Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists		

Budget Planning		
Collective negotiations		
Planning	x	
School boundry/Census information	x	
Enrollment projections		
List others		

Scheduling Functions		
Class schedules	x	
Staff schedules		
Building/Classroom utilization	x	
List others		

Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information		
List others		

Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)		
List others		

Research/Development		
Testing		
Research		
List others		

PITTSBURGH

Planning

In 1983, Pittsburgh developed a five-year plan for introducing computers and computer education. The major goals are to:

1) Provide computer literacy for all students in the district;
2) Provide increased opportunities for student computer interaction at all grade levels;
3) Provide increased access to computer facilities (beyond the normal school operating schedule);
4) Provide for increased use of the computer as an instructional tool in all instructional areas;
5) Provide for the maintenance and expansion of existing Computer Science and Data Processing curriculum offerings.

Curriculum planning is cited as the most critical element in the plan. Satellite committees have been appointed to analyze curriculum requirements and make recommendations.

The physical location of hardware will be based on an interdiciplinary center concept. Each school will have a computer center appropriate for the size of the school. A suggested configuration is 5-7 micros or terminals for each elementary school; 10-12 for middle schools, and 15-20 for secondary schools.

Management

Management of technology is under the Assistant Superintendent for Instructional Development, and Jim Angevine, the Director of Planning and Information Management.

Requests for hardware are processed through the Computer Hardware Committee and then let out for bid. A centralized software procedure is underway.

Maintenance

At this time, maintenance is supplier furnished. In the future, either a maintenance account in each program level will be established or staff may be trained as repair technicians.

Staff Training

Approximately 11 administrative staff members have been trained by the district this year; most of the 325 hours of in-service instruction have been provided by the district. Vendors and other agencies have shared 1,000 hours of instructional training with the district adding another 100 hours resulting in training for 300 instructional staff members.

A one-day in-service training course was provided for all administrators and supervisors during the summer of 1983. Voluntary in-service programs will be provided for teachers and will accommodate 150-200 teachers per year.

Hardware

The equipment used for administrative applications is mostly Data General and Burroughs. Data General and Radio Shack are the primary tools used for instructional purposes at this time.

Courseware

Some courseware is developed in the district with publishers and equipment vendors adding to the materials. A plan is being developed to evaluate software prior to purchase.

Budget

Costs for instructional applications are divided into three major categories. The first of these is hardware acquisition. Over a five-year period, funding for this category will be approximately $80,000 to $100,000 per year and will be generated from general and supplemental funds. The second category is maintenance, supplies, and software. Maintenance will be provided by the general fund and will total approximately $20,000-$30,000. Approximately $30,000 to $60,000 will be spent annually for supplies and software. The third category--in-service training, will delay funding until the third year because of the voluntary procedures in the first two years. Thereafter, annual costs are expected to be $7,000 to $10,000 per year. The approximate total annual general fund cost is expected to be in the range of $147,000 to $155,000 per year.

PITTSBURGH

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	100 %	100 %
Ratio of students to computers	334 /1	72 /1
Number of courses offered in Computer Literacy		1
Number of courses offered in Computer Science		4
Number of students enrolled in the above courses		2,271
Number of teachers trained to teach Computer Literacy	30	75
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		
Logo		
Pascal		x
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy		

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication	x	
Electronic mail	x	
Video Disc		
Robotics		x
Optical Scanners	x	
Word Processors	x	
Other		

PITTSBURGH

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report	x	x
Test scoring	x	x
IEP records	x	
List others MAP, LRPSI		
Student Non-Academic Records		
Vocational Counseling	x	x
Health Immunization		
Psychological test results	x	
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling		
Vehicle performance and maintenance		
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning		
Inventory	x	
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	x
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures		
Eligibility lists		x
Budget Planning		
Collective negotiations	x	
Planning	x	
School boundry/Census information	x	
Enrollment projections		
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules	x	
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information		
In-service information		
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)		
List others		
Research/Development		
Testing	x	
Research	x	
List others		

PORTLAND

Planning

A comprehensive technology plan designed to serve the long-range interests of students in a cost effective fashion, through 1984, was developed by Portland staff. The plan includes the reallocation of resources, tapping private sector assistance, utilizing communications technology and reorganizing instructional and organizational practices. A district-wide Instructional Technology Coordinating Committee, made of leaders of schools and support services, guides the implementation of the plan and revises it.

Technology is distributed to schools based on the schools' readiness to utilize computers.

Management

Management of technology is under three divisions: Data Processing, Instructional Technology, and Curriculum. The purchase and maintenance of hardware and software is the responsibility of Data Processing, based on recommendations of the Instructional Technology Coordinating Committee.

Maintenance

Data Processing is responsible for the maintenance of all equipment.

Staff Training

It is estimated that over 600 administrative and instructional staff members have participated in over 1200 training hours provided by the district, vendors and other education agencies.

Hardware

Most of the microcomputers used for instruction are TRS 80s with Apple IIs and PETS providing about half again as many. Data General (Computer Curriculum Corporation) provides minicomputer capabilities and a Honeywell 6610 is Portland's mainframe.

Courseware

Most software for instruction is purchased from publishers and other education services with some from vendors while little or none is developed within the district. Textbook publishers are deemed the most valuable source of courseware as they adapt the material to the curriculum.

The microsift model is used to evaluate courseware for content, clarity, user friendliness, documentation, sex, religion and race bias.

Budget

In FY82-83, $600,000 of general fund monies was spent on instructional applications and $670,000 is budgeted for FY83-84. No other fiscal information is available but recent hardware and software surveys indicate that extensive discretionary monies have been invested in technology.

PORTLAND

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	23%	83%
Ratio of students to computers	336/1	58/1
Number of courses offered in Computer Literacy	1	1
Number of courses offered in Computer Science		1
Number of students enrolled in the above courses	1,200	800
Number of teachers trained to teach Computer Literacy		
Computer Languages used for instruction:		
Basic	x	x
Cobol		
Fortran		x
Logo	x	
Pascal		
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	
Telecommunication		
Electronic mail	x	
Video Disc	x	
Robotics		
Optical Scanners		
Word Processors		
Other		

PORTLAND

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	
Test scoring	x	x
IEP records	x	x
List others		
Student Non-Academic Records		
Vocational Counseling		x
Health Immunization	x	x
Psychological test results		
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning	x	
Inventory	x	
List others		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout	x	
Overdue notices	x	
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories		
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists	x	
Budget Planning		
Collective negotiations		
Planning	x	
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	x
Staff schedules	x	x
Building/Classroom utilization	x	x
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information	x	
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	x
Research	x	x
List others Program Evaluation, Policy Analysis		

ST. LOUIS

Planning

The St. Louis Public School System is writing a plan for the purchase and use of technology. The plan will cover a period of 9 years and is being developed largely through the efforts of the Department of Data Management Services as part of the voluntary desegregation agreement.

The mission of the plan is essentially two-fold: 1) to develop technology literacy in all students, grades K-12 and 2) to utilize technology effectively as a tool of instruction and administration in schools and offices.

Management

No specific division has been assigned to handle high technology but the Department of Data Management Services has assumed much of the responsibility. Although building principals may requistion the micros, peripherals and software of their choice, all requisitions must be reviewed and approved by the Executive Director of the Department of Data Managemnet Services (DMS) but there are no restrictions regarding the purchase of any particular brand of type of equipment.

Staff Training

In-service training this year has been provided primarily by other agencies (90 hours) with the district providing approximately 35 hours. Almost 200 instructional staff people have been trained as well as an additional 20 administrative staff members.

Hardware

The mainframe computer for the St. Louis Schools is the IBM model 4341. Ninety terminals are located in the central office and at office sites throughout the district. Two minicomputer configurations are used at two high schools for instruction. There are a variety of microcomputers including Atari, PET, TI, Radio Shack, IBSs, Franklin and Victor. The majority of the computers are in the high schools and include 97 Commodores and 50 Apples. Ataris dominate the middle school scene. A variety of micros are used in the elementary schools.

Courseware

Most courseware is obtained from other education agencies as it is felt that it provides the most for the money. Some is obtained from publishers and hardware vendors but little is produced within the district. Formal evaluations of software are not conducted within the district nor is sex and race bias in the courseware screened.

Budget

Data is not available.

ST. LOUIS

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	7%	100%
Ratio of students to computers	3,057/1	124/1
Number of courses offered in Computer Literacy		
Number of courses offered in Computer Science		
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy	1	5
Computer Languages used for instruction:		
Basic	x	x
Cobol		
Fortran		
Logo	x	
Pascal		x
Pilot		x
RPG		
Other		
Teacher certification in Computer Literacy		

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication	x	
Electronic mail		
Video Disc		
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

ST. LOUIS

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	x
Test scoring	x	x
IEP records		
List others		
Student Non-Academic Records		
Vocational Counseling		
Health Immunization		
Psychological test results	x	
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance		
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning		
Inventory		
List others		
Library Functions		
Book inventories	x	
Book orders		
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	x
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures		
Eligibility lists		
Budget Planning		
Collective negotiations		
Planning	x	
School boundry/Census information	x	
Enrollment projections		
List others		
Scheduling Functions		
Class schedules		
Staff schedules		
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information		
List others Compatibility analysis and reporting		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

SAN FRANCISCO

Planning

In the Spring of 1982, at the request of the Superintendent, a master plan for the use of computers in schools was developed. Since funds were not available to implement the plan, it was not officially adopted. An action plan covering five years will be developed during the 1983-84 school year.

Management

Two divisions are involved with high technology. The first is Staff Development, Curriculum and Program Evaluation headed by Carol Choye, Associate Superintendent and the second is Fiscal and Personnel Services, Lyle Eichert, Coordinator. All hardware and software purchases are made through routine procedures and each school or office purchases equipment from its own funds.

Staff Training

The district has provided approximately 35 hours of training for 125 administrative staff and 50 hours for 650 instructional staff members. Fifteen elementary teachers and 35 secondary teachers are trained to teach computer literacy. Most of the training has been at introductory levels and provides teachers and administrators with enough information to begin development of their school computer plans.

Hardware

Apple IIs and TRS 80s I and III share the lead in the number of micros. Commodore PETS are next with almost half as many. Atari, Texas Instruments and Hewlett-Packards 85s and 86s are also found in smaller numbers. There are several minicomputers used for instructional purposes. These include CCCs with 268 terminals, Hewlett-Packard 2000s with 70 terminals, DECs with 62 terminals. Information on mainframes and administrative applications was not provided

Courseware

Publishers produce most of the courseware acquired by the district. Vendors and other education agencies provide additional software. Little courseware is produced within the school system.

Budget

General district funds paid $35,000 in 1981-82, and $120,000 in 1982-83 for instructional computing. Federal funds added another $150,000 in 1981-82 and $250,000 in 1982-83. For those same years, Apple Computer Corporation contributed another $8,000 and $18,000. Administrative costs for data processing and other business functions were $800,000 per year.

SAN FRANCISCO

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	100%	100%
Ratio of students to computers	283/1	53/1
Number of courses offered in Computer Literacy		1
Number of courses offered in Computer Science	some	20
Number of students enrolled in the above courses	100	800
Number of teachers trained to teach Computer Literacy	15	35
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		x
Logo	x	x
Pascal		x
Pilot	x	x
RPG		
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		
Telecommunication		x
Electronic mail		x
Video Disc		
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

SAN FRANCISCO

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	x
Test scoring	x	x
IEP records		
List others		
Student Non-Academic Records		
Vocational Counseling		x
Health Immunization	x	x
Psychological test results		
List others Demographic info.	x	x
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance		
List others		
Food Services		
Free/reduced priced lunch	x	x
Eligibility lists	x	x
Menu planning		
Inventory		
List others		
Library Functions		
Book inventories		
Book orders		
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	x
Staff directories	x	x
Pupil directories	x	x
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	some x sites
Eligibility lists	x	
Budget Planning		
Collective negotiations		
Planning	x	
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	x
Staff schedules	x	x
Building/Classroom utilization	x	x
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information	x	x some sites
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	x
Research	x	x
List others		

Planning

During the 1983-84 school year, a plan for the implementation of computer education will be developed by Seattle staff. Goals and objectives will be based on the philosophy that Computer Education should begin in the elementary school. The middle school program should extend understandings and provide computer literacy experiences, and the high school program should include instruction through advanced programming. Career information should be a part of the program at all levels.

It has been recommended that by the end of the 1983-84 school year that every elementary school have a minimum of three computers or ratio of one micro for every 100 students. Each middle school should have 10 micros or one for every 100 students and one printer. There should be a computer for every 75 high school students or 15 per secondary school plus two printers. (These numbers exclude those computers purchased through categorical funding).

In addition, a computer van is proposed to provide computer education experiences at each elementary school.

Management

Curriculum and Instruction, directed by Dr. Alice Houston, Assistant Superintendent for Business and Finance with Assistant Superintendent Mr. Richard Fuller at the helm, manage high technology in the district. Curriculum and Instruction has a staff of 7 while Business and Finance commands a staff of 44.

As discussed under the Planning section, all schools will be provided with a minimum number of computers during the 83-84 school year. The dissemination of these computers will be done by the Department of Curriculum and will be approved by the Division of Curriculum and Instruction.

Maintenance

The maintenance of equipment in the Business and Finance Division is under contract to the supplier. Some repairs are done in-house in the Division of Curriculum and Instruction but most of it is provided by suppliers.

Staff Training

Over 495 school building staff and 25 central administrative staff members participated in 292 class hours (over 5,000 participant hours) of computer in-service training. These classes included an introduction to the Apple II and familiarization with the use of computers in the classroom. Intermediate sections learned to write simple BASIC programs and write LOGO and PILOT authorizing languages.

An introduction to a computer-assisted learning lab which emphasized learning in basic skills with the PET computer, computer awareness, programming in PASCAL and the teaching of LOGO were offered as well.

Hardware

A variety of microcomputers are found in the schools including Apples, Ataris, Commodores, TRS 80s, and a PDP 11 minicomputer. Commodores are by far the most common with Apples and TRS 80s the next most frequent but well behind. The Commodore 2000 series and VICs and Atari 400s meet the minimum specifications.

Courseware

Most courseware is produced within the district and it is found to be the most valuable because it is relevant to curriculum goals and objectives. A plan for software evaluation and recommendations which will include race and sex bias screening is being developed.

Budget

The Educational Data Services has a budget of $1,744,000 for 1981-82, and is adjusted 6% per year for inflation. No other information is available.

SEATTLE

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	100%	100%
Ratio of students to computers	100/1	75/1
Number of courses offered in Computer Literacy	n/a	n/a
Number of courses offered in Computer Science		4
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy	40	30
Computer Languages used for instruction:		
Basic		x
Cobol		
Fortran		x
Logo		
Pascal		x
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication	x	
Electronic mail	x	
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

SEATTLE

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report	x	
Test scoring	x	
IEP records	x	
List others Attendance in high schools		x
Student Non-Academic Records		
Vocational Counseling	x	
Health Immunization	x	
Psychological test results	x	
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	x	
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning	x	
Inventory	x	
List others		
Library Functions		
Book inventories		x
Book orders	x	
Book checkout		x
Overdue notices		x
List others		
Public Relations Area		
Mailing lists	x	x
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists	x	
Budget Planning		
Collective negotiations	x	
Planning	x	
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules	x	
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information	x	
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		

TOLEDO

Planning

Several committees and subcommittees have recently completed a plan for the instructional use of technology. The members of the city-wide planning group are teachers, administrators and other staff members. At this time, there are no recognized procedures for the distribution of computers to elementary schools. Terminals, however, are evenly distributed at the secondary level.

Management

The Data Processing department has responsibility for the mainframe and business applications while the Director of Math and the Department of Planning oversee instructional applications.

All hardware purchases, however, must go through the DP Steering Committee. During FY1982-83, a list of approved microcomputers was compiled by a subcommittee after extensive review and evaluation of several micros.

Maintenance

At this time, maintenance is supplier furnished but it is hoped that equipment can soon be repaired in-house.

Staff Training

Approximately 50 teachers have received 20 hours of training in Basic programming through a contract with vendors. The district provided professional growth credit through 20 hours of computer instruction for 30 administrative staff members.

Hardware

The mainframe is an IBM. It is used for administrative and business applications. All of the high schools are linked to the mainframe for a computerized math program. Vocational Education uses a Burroughs minicomputer. Twenty-four terminals are tied into the Plato system. Various minicomputers, primarily Apples, Atari, Radio Shack, and IBM are used for various instructional purposes.

Courseware

All materials are obtained from publishers and vendors. These sources are found to be of equal value.

Budget

Fiscal information is not available.

TOLEDO

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	13%	100 %
Ratio of students to computers	3,393/1	244/1
Number of courses offered in Computer Literacy	0	0
Number of courses offered in Computer Science	0	1
Number of students enrolled in the above courses	0	300
Number of teachers trained to teach Computer Literacy		
Computer Languages used for instruction:		
Basic	x	x
Cobol		
Fortran		
Logo		
Pascal		
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy	no	no

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable	x	x
Telecommunication	x	
Electronic mail	x	x
Video Disc		
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

TOLEDO

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	x
Grade report	x	
Test scoring	x	x
IEP records	x	x
List others		
Student Non-Academic Records		
Vocational Counseling	x	x
Health Immunization		
Psychological test results	x	x
List others		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling		
Vehicle performance and maintenance		
List others		
Food Services		
Free/reduced priced lunch		
Eligibility lists		
Menu planning		
Inventory	x	
List others		
Library Functions		
Book inventories		
Book orders		
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists	x	
Budget Planning		
Collective negotiations	x	
Planning	x	
School boundry/Census information	x	x
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	x
Staff schedules	x	x
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information	x	
In-service information	x	
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)		
List others		
Research/Development		
Testing	x	
Research	x	
List others		

WASHINGTON, D.C.

Planning

A five-year computer literacy plan for school years 1983-87 was developed in September of 1982. The goal of the program is to give students a command of the skills that constitute mathematical, scientific, and technical literacy. Objectives are: 1) to develop computer awareness among students, teachers, supervisors, and administrators; 2) to develop and implement a computer literacy curriculum; 3) to design and implement a Computer Training Laboratory; 4) to apply computer technology in competency based curriculum; 5) to apply computer technology in classroom management; 6) to apply computer technology to local school management.

Management

The management of technological applications falls under 5 directors: 1) Office of Instruction, James T. Guines, Associate Superintendent; 2) Division of Program Development, J. Weldon Greene, Director; 3) Educational Technology, Kyo R. Jhin, Assistant Superintendent; 4) Instructional Service Center, Dorothy Stephens, Director; 5) Division of Automated Information Systems, Marvin Raines, Director.

Equipment is purchased centrally under a negotiated contract. Courseware is reviewed prior to purchase by the Computer Literacy Training Laboratory committees.

Maintenance

Computer maintenance is handled both in house and by suppliers. Almost 500 staff members have taken instruction on the care and maintenance of computers.

Staff Training

Three full time trainers in Educational Technology have trained over 1600 teachers in computer literacy. Several hundred people have taken advantage of computer training provided by other divisions as well.

Hardware

The Univac 1161 series handles administrative applications. A PDP 1170 is used for Guidance services and a PDP 11-40 and 11-20 and several brands of microcomputers are employed for instructional purposes. These micros include 500 Commodores, 500 Dolphins, 200 Digitals, 50 IBMs and some Ataris and Radio Shacks as well.

Courseware

Publishers, vendors, other education agencies and the school system itself all provide courseware.

Budget

During the 1982-83 school year, approximately $1.7 million in state funds and $1.3 million in federal funds were earmarked for instructional computing. In both the 1981-82 and 1982-83 school years, $700,000 was budgeted for administrative applications.

WASHINGTON, D.C.

INSTRUCTIONAL INFORMATION

	Elementary Grades	Secondary Grades
Percent of schools with computers	60%	100%
Ratio of students to computers	97/1	40/1
Number of courses offered in Computer Literacy	1	1
Number of courses offered in Computer Science		11
Number of students enrolled in the above courses		
Number of teachers trained to teach Computer Literacy	1,600 total	
Computer Languages used for instruction:		
Basic	x	x
Cobol		x
Fortran		x
Logo		
Pascal		
Pilot		
RPG		
Other		
Teacher certification in Computer Literacy		

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ADDITIONAL FORMS OF TECHNOLOGY

	Have Now	Planned For Future
Cable		x
Telecommunication		
Electronic mail	x	
Video Disc		x
Robotics		
Optical Scanners	x	
Word Processors	x	
Other		

WASHINGTON, D.C.

ADMINISTRATIVE APPLICATIONS

Student Academic Records	Central	Bldg.
Class schedule	x	
Grade report	x	
Test scoring	x	
IEP records		
List others		
Student Non-Academic Records		
Vocational Counseling	x	x
Health Immunization		
Psychological test results		
List others Demographic info.		
Transportation Functions		
Passenger lists	x	
Route/driver scheduling	no	
Vehicle performance and maintenance	x	
List others		
Food Services		
Free/reduced priced lunch	x	
Eligibility lists	x	
Menu planning	x	
Inventory	x	
List others Counter sheet reporting		
Library Functions		
Book inventories	x	
Book orders	x	
Book checkout		
Overdue notices		
List others		
Public Relations Area		
Mailing lists	x	
Staff directories	x	
Pupil directories	x	
List others		

Cocurricular Activities	Central	Bldg.
Income/Expenditures	x	
Eligibility lists	x	
Budget Planning		
Collective negotiations	x	
Planning	x	
School boundry/Census information	x	
Enrollment projections	x	
List others		
Scheduling Functions		
Class schedules	x	
Staff schedules		
Building/Classroom utilization	x	
List others		
Personnel Functions		
Salary information	x	
Employment files	x	
Leave records	x	
Certification information		
In-service information	x	
List others		
Business Functions		
Payroll	x	
Receipts/Spending/ Accounting	x	
Appropriations info.	x	
Inventory, Reports (Federal, State, Board)	x	
List others		
Research/Development		
Testing	x	
Research	x	
List others		